THE BRITISH JOURNAL
OF
TUBERCULOSIS

Vol. XVII. January, 1923. No. 1.

SYMPOSIUM.

THE FUTURE OF THE TUBERCULOSIS MOVEMENT.

DURING the Great War, and in the period immediately following the war, there appeared in this journal a series of Symposiums,[1] and in the number for January, 1919 (Vol. XIII., No. 1, pp. 1-13), a special Symposium on "The Next Step in the Tuberculosis Movement." During the past four years there has been abundant opportunity for a consideration of such methods and measures as have found favour in the past, and attempts have been made to form a just and serviceable estimate of their relative value. It is generally admitted that the time has now arrived when principles and practices connected with present-day enterprises seeking the prevention and arrest of tuberculosis should be submitted to thorough, unprejudiced, and scientifically directed inquiry. In order to secure authoritative and reliable opinion regarding the existing position of tuberculosis policy, we have invited communications from a number of recognized leaders in the tuberculosis campaign.

[1] See the following issues of this journal: January, 1916, Vol. X., No. 1; January, 1917, Vol XI., No. 1; April, 1917, Vol. XI., No. 1; January, 1918, Vol. XII., No. 1; April, 1918, Vol. XII., No. 2; January, 1919, Vol. XIII., No. 1; April, 1919, Vol. XIII., No. 2; July, 1919, Vol. XIII., No. 3; October, 1919, Vol. XIII., No. 4.

FROM THE RIGHT HON. PROFESSOR SIR CLIFFORD ALLBUTT,

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Regius Professor of Physic in the University of Cambridge,

AND

P. C. VARRIER-JONES,

M.A., M.R.C.S., L.R.C.P.,

Hon. Consulting Tuberculosis Officer for the County of Cambridge; Medical Director, Papworth Tuberculosis Colony.

Perhaps there never was a time when the problem of tuberculosis presented a more hopeful outlook. We are at last learning the lesson of our past failures. We are discarding the spectacles which distorted the view, and are now beginning to perceive the nature of the problem as it exists to-day. The campaign against tuberculosis, in this as well as in other countries, suffers from a confusion of ideas, a confusion of aims, a confusion of thought; because our data regarding the relative importance of the various factors which contribute towards the problem are incomplete. In the first place, owing to the incompleteness of our knowledge of infection and its incidence, elaborate schemes have been devised for a hypothetical case of pulmonary tubercle; but this case, amongst the working-class population at any rate, is but rarely found. In other words, we have been side-tracked. This is part of the evil of our arguing in abstract terms; the inevitable result has been disappointment. All the parties in the transaction have been blamed—the general practitioner, the consulting physician, the superintendents of sanatoria, and indeed the method of treatment itself. Why? Because our schemes were based on a false hypothesis; we disregarded the truth, or recognized only that part of it which fell in with our own preconceptions. We must start again and study the *facts*. We must not spend time in hunting for that which, as we have shown elsewhere, cannot, or can very rarely, be found. "If we are going to obtain success, whether in the treatment or the prevention of disease, we must face the facts as they present themselves to-day."[1] To profess to pick and choose "early cases" when we have no clear and scientific method of determining when a case is early enough for treatment, and so to disregard the rest, is inevitably to court disaster, and to feed that sense of disappointment which is abroad to-day. In the first place, then, let us get rid of fanciful notions, and view the problem as a whole and as it is. Let us learn how to treat the infectious case, and how to turn off the tap before undertaking to empty the trough. When once

[1] For records of further experiences in Colony Treatment and After-Care see article in *Lancet*, July 8, 1922, by Sir Clifford Allbutt and Dr. P. C. Varrier-Jones.

we have got rid of preconceived notions and have started afresh to build on a surer foundation, let us get rid of stereotyped routine, official interference, and red tape. The recent partial nationalization of trade sufficed to show the result of such interference; the results of the "Sanatorium Campaign" point in the same direction. You cannot make the State take the place of the private physician when the practice of medicine calls for the "resourcefulness, adaptability, commonsense, tact, and imagination" which Sir George Newman rightly regards as essential to the practitioner. Furthermore Sir George says: "The medical practitioner is individualistic in upbringing and in genius. He should safely hold the secrets of his client, and he should have ample opportunity of rendering the full personal worth of his counsel to his patients. The social and individual relationships between doctor and patient are invaluable in the treatment of disease. His responsibility and his growth in individual worth are of firstrate importance."[1] Is the public health officer allowed scope enough for his individual freedom, or is he bound by red tape, and perhaps hampered by a lay committee? This is the impression left on our minds by conversation with such officers. How is it possible to "run a successful enterprise" when the board of managers—the lay public health committee—is a band of amateurs whose attention is divided between the ratepayer and the patient, whose several interests may be conflicting? A patient cannot receive benefit from treatment unless he voluntarily submits to such treatment, and unless his interests are uppermost in the minds of the authorities under whose charge he is. Is it to be wondered at that such statements as the following receive circulation? "There is no enthusiasm among tuberculosis officers"; "Tuberculosis schemes have but little life in them"; "Conductors of sanatoria are disappointed with results"; and so on. That tuberculosis officers have little enthusiasm may or may not be true; but if little enthusiasm be displayed, can we be surprised? What has such a clinical officer to look forward to? Is there any chance of promotion in the service? As far as tuberculosis is concerned, it seems to be a blind-alley occupation. At the present time his prospects are: (1) To remain as he is, a poorly paid official; or (2) to become a medical officer of health, having already thrown to the wind all his clinical knowledge and experience —surely a wasteful proceeding. We cannot declare too plainly that on the whole the present methods of dealing with tuberculosis are wrong. Even in the Ministry of Health the problem is deemed unworthy of a whole-time official, whose business should be to place at the disposal of the profession facilities for knowledge, and to encourage enterprise amongst voluntary workers, rather than to lay down regulations and routines to check the expanding and progressive art of medicine.

[1] See Sir George Newman's Annual Report for 1920.

Small wonder, then, that local authorities push endeavour aside, and that lack of enthusiasm—nay, marked indifference—ensues. Our hope for the future is based upon a new awakening to the real facts of the situation. When we cease to be satisfied with the "make-believe," and begin to perceive that we are on the wrong lines, then we can make a new start, avoiding our previous mistakes. Here are our chief conclusions: (1) Voluntary effort in medicine as in other walks of life must be the corner-stone of the new structure. (2) Voluntary co-operation in tuberculosis schemes between all members of the medical profession must be the principle of future action. (3) Officialdom must cease to meddle with the treatment of disease; it must confine itself to helpful co-ordination, and to the endeavour to organize private efforts; it must collect information on sound statistical methods; it must not cramp efforts by subjection to stereotyped routine. (4) Tuberculosis dispensaries should be part of the organization of voluntary hospitals, and the tuberculosis officer a member of the staff of the voluntary hospital, not an official of the local authority; so that he may have fair scope for initiative. (5) The almoner's office should be the connecting link between the purely medical and the clinical side of the work and that of social service. Statistics and notifications may come through the local medical officer of health as at present; otherwise his duties should be confined to co-ordinating effort. (6) The local sanatorium, if in a suitable position, should be managed as a voluntary hospital, and as part of the local hospital organization; its activities should be enlarged until it enfolds within itself the sanatorium, the hospital for advanced cases, and, in certain areas where the environment is suitable, a village settlement. By accepting and acting on these free scope, both medical and lay, will be provided, and full benefit obtained also from voluntary aid, both personal and financial. Thus we should treat all those who are in need of treatment, and avoid a divorce between the private and the official branches of medicine.

FROM PROFESSOR SIR THOMAS OLIVER,

M.A., M.D., D.SC., LL.D., F.R.C.P., F.R.S.E.,

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It is difficult to make a forecast of any movement. There is not the slightest doubt that the open-air treatment has given the best results, but this and efforts to improve upon it are thwarted, if not destroyed, by the return of patients from sanatoria to their poor and frequently overcrowded dwellings. Tuberculosis dispensaries are not always provided with the equipment necessary. Dr. Dickinson, of our City Tuberculosis Dispensary, informs me that he has, for example, no X-ray outfit. Although the future of medicine is more likely to be

devoted to the prevention than the cure of disease, a large bulk of the present treatment of tuberculosis is rather clinical and dietetic than preventive. If the disease is to be prevented, the housing of the people must receive more attention, and especially the treatment of patients after they leave sanatoria. In these days it is difficult to arouse public interest in the "after-care" treatment of the tuberculous. There is widespread apathy with a discouraging indifference to this, one of the most serious aspects of the treatment of those who are suffering from the malady, and by whom, since little is being done for them, infection is spread through the family, especially among children. Three problems for the future deserve attention: (1) What part artificial pneumothorax should play in treatment. Do statistics give encouraging results? (2) Physical examination of workers before entering upon industrial life, also before resuming such after an illness. And (3) work for the tuberculous. All infected persons cannot get light work in the open. There are, however, for those who are allowed to follow their vocation, certain out-of-door exercises, which clerks and others shut up in shops could undertake without seriously interfering to any serious extent with their work, always having regard to the effect upon temperature of such exercises as may be allowed.

FROM SIR HENRY GAUVAIN,

M.A., M.D., M.C., M.R.C.S., L.R.C.P.,

Medical Superintendent Lord Mayor Treloar Cripples' Hospital; Hon. Consulting Surgeon King Edward VII. Welsh National Memorial Association for the Treatment of Tuberculosis; Consultant in Surgical Tuberculosis to the London, Essex, and Hampshire County Councils, etc.

I confess I feel a difficulty and a diffidence in writing on the Future of the Tuberculosis Movement. A reliable specific treatment for tuberculosis has still to be discovered. The many hopes which have been raised have always been followed by disillusion. Yet there is no reason for pessimism, and a specific treatment may be discovered at any time. If it be, I am inclined to think it will be in the realm of chemotherapy. Meanwhile much patient investigation has resulted in steady, if slow, and consistent progress. Paradoxically it would appear that the greatest recent advances in the treatment of pulmonary tuberculosis have been on surgical lines and in so-called surgical tuberculosis in non-operative treatment. These new methods deserve intensive study. Increasing attention is being rightly paid to measures designed to increase the resistance of the individual to attacks of the bacillus; in other words, the soil as well as the seed is being more thoroughly investigated. More should still be done in regard to immunology and preventive medicine. Though vast sums of money are being spent in anti-tuberculosis endeavour, it is open to grave doubt if we are getting full value for the

expenditure. The solid spade work essential might be improved. The machinery badly needs synchronizing and tuning up. Real team work is often lacking. I can conceive nothing likely to give better return for expenditure than thorough initial specialized training in all branches of tuberculosis study and service to all medical men entering on tuberculosis work. An initial period of training for at least one year before entering tuberculosis service would be of priceless benefit, and thereafter a course of from three to six months' special work every five years. Who of us is so good that we do not realize our limitations and would not welcome such a scheme? And in these days of tight finance it would certainly prove a real economy. Red-tape and reports are giving a false sense of accomplishment. Cumbrous and elaborate administration deceives, but it does not cure. There is too much despair about the so-called incurables. The despair is certainly justifiable if clinical effort is too early abandoned. Better kill nine in curing one than allow ten to die through inaction. The next year two out of ten will survive, and with increasing skill who can say when any case may be considered hopeless? After-care is too perfunctory, and many a man has been snatched from death only to relapse through later neglect. Above all, we must concentrate on the children. A child cured may mean a long life spared, and that is good business, a handsome return for money expended. Lastly, let us never acknowledge defeat. A case once notified should never be abandoned. If one method of treatment offers little prospect of success, change it early and let another be tried. Let no precious time be wasted. If necessary, the patient must be sent away for treatment. That is where co-ordinated work and organization is of priceless value, and that is why each tuberculosis officer should at any rate have a nodding acquaintance with all branches of tuberculosis service and know something regarding all methods of treatment available. He may not be able to practise all himself, but he should know where they can be carried out, and the patient should have the opportunity of their application in his case, no matter from what district he comes. Many lives might be preserved or prolonged if this essential need were met.

From PROFESSOR E W. HOPE,

O.B.E., M.D., D.SC.,

Medical Officer of Health for the City and Port of Liverpool and Chief Medical Officer of the Education Committee; Professor of Public Health in the University of Liverpool; Examiner in Public Health to the University of Cambridge and the Royal College of Physicians and Royal College of Surgeons, London.

It is to be hoped that the future of the tuberculosis movement will be increasingly in the direction of prevention. It is perfectly true that for many years past those whose duty it has been to deal with the subject

have given a great amount of time and attention to prevention; nevertheless, it is clear that *treatment* still proves the most attractive side of the question. This is evidenced by the fact that at any meeting called with the object of considering the *prevention* of tuberculosis, the discussion rapidly tends to lapse into a conflict regarding rival methods of *treatment*. During the last fifty years there has been a considerable fall in the incidence and mortality from tuberculous disease. This, in my opinion, is attributable to the following causes: (1) Progressive improvement in national prosperity and betterment in the conditions of industrial occupation. (2) Consequent improvement in the habits of the people, and especially as regards abstinence from, or a more temperate use of, alcohol. (3) Improvement in the general housing of the people; removal of insanitary areas from cities; and the procedure under various Acts of Parliament designed to improve the sanitation of centres of population. (4) The supervision of, and resultant improvement in, the milk supply. (5) The isolation of infectious tuberculous patients. Since the outbreak of war there has been a large increase throughout the country in the provision of beds for the treatment of tuberculosis, approximately 19,000 being now available, and a large share in the decline of tuberculosis in recent years must be attributed to this isolation. It is quite true that the provision o. suitable housing accommodation has recently grown apace, but as a matter of fact it has barely kept up with the growing demand, and has not overtaken arrears. Active housing operations now in progress will have their beneficial effect in the prevention of the disease, and when circumstances permit the building trade once more to resume operations, the good results will be very apparent. Turning from this aspect of the question, one very important matter calls for attention, and that is the after-care of patients who leave sanatoria either with tuberculosis quiescent, or with the disease in a more or less infectious condition. Some form of sheltered occupation is necessary, since a patient who has suffered from tuberculosis is very liable to relapse if he returns to resume the hopeless competition with normal and healthy men. In this connection the principles in operation at the Papworth Colony in Cambridgeshire deserve the most attentive study. Obviously, in the case of patients who leave hospital with tuberculous disease in an active stage, the most careful supervision is called for to prevent them becoming a danger to others. I would hope to see a marked extension of the methods at present adopted for the supervision of patients of this class. So far as children are concerned, the admirable arrangements at Leasowe, near Liverpool, at the Lord Mayor Treloar's Hospital for Cripples at Alton in Hampshire, under the direction of Sir Henry Gauvain, and elsewhere, will be further copied and amplified.

FROM PROFESSOR S. LYLE CUMMINS,

C.B., C.M.G., M.D., LL.D., B.CH., B.A.O., R.U.I., D.T.M. & H.,

David Davies Professor of Tuberculosis, University College, South Wales and Monmouth; Principal Medical Officer, Welsh National Memorial Association.

The factors which tend to impede the tuberculosis movement are of two orders. The most important point with regard to prevention is that, so far as human tuberculosis is concerned, the disease is spread *in the home* by infection from known or unrecognized cases to those in their immediate vicinity, more especially to those of tender age. Again, the development of the infection once implanted depends very largely on economic factors, such as good housing, good food, and the necessary amenities of life. It is clear that, while there is universal agreement on these points amongst doctors, the remedy lies, not in medical or sanitary practice alone, but in the raising of the standard of home comfort and amelioration of poverty and distress. A moment's reflection suffices to show that these desiderata cannot be brought about either rapidly or easily. Again, it is universally admitted that a majority of the three or four thousand deaths per annum from surgical tuberculosis, and the crippling of a much greater number of persons through the bovine bacillus, could be completely prevented if milk supplies were rendered entirely safe. Here again we touch a phase of the problem which depends, not on want of knowledge, but on social and economic factors about which we can only advise. Our advice, however, may, perhaps, not be unanimous in this regard, since there remain certain problems with reference to the effect of boiling or sterilizing milk on its nutritive properties; the question of additional expense in the provision of an essential food; and the possibility that there may result from the ingestion of infected milk an unknown degree of acquired immunity to human tuberculosis about which medical men may differ at the present time. These considerations bring us to the second factor of difficulty in relation to the tuberculosis movement. This factor is the want of more precise knowledge about the intricate processes underlying susceptibility and resistance to the disease. Here we are up against problems which are entirely matters for our profession to deal with, except in so far as financial support is concerned. While we must look to the Government or benevolent persons to give us the sinews of war in the shape of grants towards research, the actual research itself is a matter entirely for our profession, working in co-operation with experts in the allied sciences of chemistry and physics. We should be careful, as a profession, to impress upon Government departments, public bodies, and private individuals those facts relating to tuberculosis about which we are unanimous, and we should, through research, make every effort to bring to light those

secrets of tuberculosis which are still hidden from us, in order that we may finally speak on all the problems of the disease with complete accord.

FROM T. EUSTACE HILL,

O.B.E., D.HY., M.B., B.SC.,

Medical Officer of Health for the County of Durham; President, Association of Medical Officers of Health.

The success of the tuberculosis movement in my opinion depends very largely on the improvement of the housing conditions, especially in our industrial areas, and in the elimination of tuberculosis from dairy cattle. The bad housing conditions often associated with very gross overcrowding in many districts, and particularly in the North of England, militate very greatly against the success of sanatorium treatment, and under the present conditions very many patients whose disease has been arrested as a result of institutional treatment have to return to home conditions which are incompatible with health, and, consequently, within a few months the effect of sanatorium treatment is lost. Many years ago I advocated that in each town or village houses should be provided in which persons who have had tuberculosis, arrested as the result of treatment, might be housed at a reasonable rent under conditions suitable for the maintenance of good health, and I still think that this is a practicable proposition. As regards bovine infection, it is now conclusively proved that the bacillus of bovine tuberculosis is responsible for a large proportion of cases of surgical tuberculosis. Surgical tuberculosis is more common than many people think, and during the past twelve months the County Council of Durham has expended over £14,000 in treating this form of tuberculosis. Denmark has shown that tuberculosis can be eliminated from dairy cattle, but the British Government continues to adopt a halting attitude on this important matter, and recent legislation is not likely to effect any improvement. The segregation of the advanced tuberculous patient is a matter of importance, but at present this class of patient usually prefers to remain at home. Progressive education of the public on this matter and also in respect of the importance of seeking medical advice in the early stages of the disease is of great importance. Earlier and more systematic notification of early cases of tuberculosis by medical practitioners is also necessary. There is now a tendency towards closer co-operation between the medical practitioner and the tuberculosis officer, but to make this thoroughly efficient local authorities must recognize the importance of appointing expert clinicians and paying them adequate salaries. The supervision of industrial conditions has had most beneficial results in the matter of tuberculosis, and the Refractories Industries (Silicosis) Scheme is an

example of good work in this direction, and I think this scheme will ultimately eliminate tuberculosis from these industries. Further, the provision of open-air schools for what may be termed the pre-tuberculous case is desirable, as is also the development of the training colony and village settlement. I am not at all despondent as to the ultimate elimination of tuberculosis from our midst, and I am satisfied that our tuberculosis schemes are on the right lines, but better housing conditions and the stamping out of bovine tuberculosis are essential concomitants.

FROM G. B. DIXON,

M.R.C.S., L.R.C.P.,

Chief Tuberculosis Officer and Medical Superintendent, City Sanatorium, Yardley Road, Birmingham.

Institutions for the diagnosis and treatment of tuberculosis should be rendered as efficient as possible. Every facility must be provided for bacteriological, radiographic, and pathological work, and the services of a dental surgeon and laryngologist should be available for all cases, and not for exceptional ones only. Institutions undertaking the industrial re-education of tuberculous patients cannot at present deal with every case where this is desirable, nor are they able to undertake the "settlement" of the majority of their patients; it is essential, therefore, that sanatoria should make every use of "occupational therapy," and in this way employ and interest their patients during a period of treatment by teaching them some easily acquired trade or occupation by which they might partially support themselves on discharge. By some system of co-operation in the different areas it should be possible to supply ex-patients with raw material at a low cost, and to collect their work and market it. In this way many patients who will never return to factory life might become partially self-supporting instead of remaining destitute because they cannot work a maximum number of hours daily under factory conditions. Tuberculosis work as a whole suffers defamation because there is no organized attempt to collect and correlate the facts in connection with it and to summarize and publish them. It would be of great use if the different societies and journals dealing with tuberculosis would direct their attention to this aspect of the work. and give publicity to the figures dealing with its different phases from time to time. Efficiency and publicity are essential.

From ALFRED SALTER,

M.D., B.S., M.R.C.S., L.R.C.P., D.P.H., M.P.

The only way to attack tuberculosis fundamentally is to rehouse the people on decent and scientific lines, and to raise their standard of life as a whole. Two-thirds of my own district of Bermondsey wants pulling down or blowing up, and the population per acre and per room must be reduced. While the housing conditions of our working people remain as they are to-day no other remedial measures are of the least avail. Twenty-five years' residence in an industrial district as a poor man's doctor has convinced me that housing reform on the lines of the National Housing and Town Planning Council's schemes should be *the very first* legislation directed towards eradicating tuberculosis.

From IAN STRUTHERS STEWART,

M.D., CH.B., F.R.S.E.,

Senior Physician to the Nordrach-on-Dee Sanatorium, Banchory, Scotland.

Up till now there has been a tendency for the tuberculosis movement to devote its time and energies to the creation of schemes for dealing with cases in the aggregate. May not the question now be asked whether the time has not come for an intensive study clinically of the individual patient, and the collection and collation of such studies with a view to the elucidation of some of the many problems connected with diagnosis, prognosis, and more especially treatment? Are we satisfied with the results of treatment as obtained at present?

ORIGINAL ARTICLES.

SOME REASONS FOR FAILURE IN SOLVING PROBLEMS CONNECTED WITH TUBERCULOSIS

By SIR JAMES MACKENZIE,

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The Editor has asked me to write a short article on Tuberculosis, and, to oblige him, I do so, with the understanding that I can throw no light upon the subject. As, however, in our enterprise at St. Andrews we are engaged in the study of the diseases common among the people, tuberculosis naturally is being considered by us, and what I propose to do in this paper is to give some of the ideas and principles which guide us, and which have a bearing upon tuberculosis.

One principle on which we lay stress is that the path of progress in medicine is to be found in the recognition of the reasons for failure rather than in the contemplation of successes. Everyone recognizes that many enterprises connected with tuberculosis have failed, and it will be profitable to consider the reason for these failures.

In searching for the causes of failure, we have found one glaring cause to be the defective knowledge of the symptoms of disease. Disease is made manifest only by the symptoms it produces, and it was evident that no progress could be made until the symptoms, their mechanism and significance were understood. If, for the success of an enterprise, a certain kind of knowledge is required, and the enterprise is undertaken on the assumption that that knowledge exists when it does not exist, then that enterprise is bound to fail. This reveals one cause of the failure to solve problems connected with tuberculosis.

In our inquiry we take for a guide this definition of disease—it is the reaction of the organs of the body to an injurious agent. In this description we recognize (1) an agent and (2) a reaction. The reaction is a disturbance of the function of organs, and, it may be, a damage of the tissues of the organs. We thus see three aspects in which disease may be viewed—(1) the agent, (2) the disturbance of function, and (3) the damaged organ.

Let us briefly review the attitude of present-day medicine towards disease. It is not necessary to go further back than the middle of last century, when the more thorough study of pathology was introduced. The improvement of methods and the minute study of the changes found in the damaged organ led to the belief that the post-mortem findings would discover the cause of death and the nature of the antecedent ill-health. Under the dominance of this idea, the diseases of the human body were classified and described in accordance with the morbid anatomy; and this classification still holds good in clinical medicine. The influence of this conception led physicians to seek for the signs of the damaged organ during life, and so led to that diagnosis which is based on "physical signs," and which does so much to obscure the path which clinical medicine should follow.

Gradually it was realized that pathology failed to meet the expectations which its introduction raised, and it took a back place with the introduction of bacteriology. Great expectations were raised by the introduction of bacteriology, and it was anticipated that problems of disease would be solved when we recognized the causal agent. With such enthusiasm was this conception introduced, that laboratories for bacteriology sprang up everywhere, and the gospel was preached that progress in medicine could only come through the laboratory, and that, at last, medicine was to become "scientific." Here, again, disappointment has followed. Beyond discovering an agent which participates in the disease—it may be a necessary agent—bacteriology has done little to solve the problem of tuberculosis and allied diseases. It is not yet recognized how little it has done to solve the various problems, for the bacteriologist will persist in contemplating his successes, and turns his back upon his failures.

Let us consider the description just given of what constitutes disease. The damaged organ has been studied with meticulous care by the pathologist. An agent has been studied with equal care by the bacteriologist. Neither of these reveals the nature of ill-health nor the cause of death. Ill-health and death are due to the disturbance of the processes concerned in the maintenance of health. What is known of these disturbed processes? Nothing, or practically nothing, for the reason that all attention has been given to the agent and the dead tissue, and none to the living, reacting human body.

Let us consider the attitude of medicine to-day to these reactions. Some months ago I discussed the early stages of consumption with a tuberculosis expert. He said he knew quite well the early symptoms. I asked what they were, and he replied, "Malaise." I said, "Tell me, what is malaise?" His notion of malaise was so vague that it was evident he did not appreciate its significance. This absence of an understanding of the meaning and significance of malaise is universal.

"Malaise" is a term used to describe a combination of symptoms. Included in it is the loss of the sense of well-being, the presence of the sense of exhaustion at rest or on slight exertion, loss of appetite, and, it may be, chilliness, sweating, etc., while, accompanying these sensations, there is often pallor, an increased pulse-rate, and wasting. What is the mechanism of all these phenomena? Practically nothing is known regarding it, yet these phenomena are the direct evidences of the reaction of the body to the injurious agent; they are due to the agent of disease disturbing that mechanism of organs by which health is maintained, and really constitute ill-health. The increase of such disturbance leads eventually to death. Yet medicine has not advanced so far as to recognize the need for understanding this part of disease, and in this neglect we can find another reason for the failure to solve such problems as that of tuberculosis.

But there are even simpler disturbances of which we are ignorant. We recognize in the microbe the agent which may contribute to the damage of the organ, and we may recognize the damaged organ, but what is the process by which the agent does this damage? Here, again, we are profoundly ignorant, and the literature of tuberculosis gives little beyond vague guessing. Take one of the simplest instances—an enlarged tuberculous gland. How does the tubercle get to the gland? What do we know of lymphatic glands? I read in a recent textbook that "lymph glands vary considerably in size, some being no larger than a pin's-head, whilst others are as large as a bean." In the illustration given of the normal glands of the neck, some of these must be over one inch in length. The question arises, Are these normal glands? We may find in the dissection of the neck practically no glands. Take, for instance, the experience of a surgeon. He removes a mass of glands from the neck. He searches diligently lest he should leave any behind. None the size of a pin's-head can escape him, and yet in three months' time a great number of glands have grown in the parts he had so carefully dissected. How did these glands come to be there? They must have been so minute that the naked eye could not detect them; and if microscopic in size, have they that elaborate formation so fully described as constituting a gland with its framework, lymph sinuses, lymph follicle, and its cortex and medulla? Are the glands which are described in textbooks normal, or are they pathological? How little we know of the way in which glands develop is shown by the absence of any accurate knowledge of nasal adenoids. I cannot find anywhere a reliable account of the agent or the process by which the agent causes an increase of growth of this so-called lymphoid tissue.

And now one remark as to so-called cures. Modern medicine is linked to the age of superstitious beliefs, of amulets and exorcisms, by

its attitude towards treatment, and especially to "cures." Empiricism may be defined as the employment of a remedy of whose actions we are ignorant for a disease whose nature we do not understand. Rational or scientific treatment means, on the other hand, the recognition of the symptoms of ill-health, with a knowledge of their mechanism and prognostic significance, and the employment of a remedy whose action on the sick human body we know and understand.

It is necessary only to state the difference between empirical and rational treatment to recognize what little claim modern medicine has to be scientific, for one of its latest developments—vaccine therapy—ignores the elements necessary to rational treatment—*i.e.*, a knowledge of symptoms and their prognostic significance. Of course, empiricism can claim its successes. Quinine and castor oil have been found to be of value, and they fulfil the description given above of an empiric remedy. But both were used without any real knowledge of malaria or constipation.

The isolated successes have had an impressive influence on medicine, in that they direct attention from the real problem of medicine and send investigation hunting a will-o'-the-wisp. The 10,000 failures are put on one side, and the whole attention is devoted to the rare successes.

The history of tuberculosis reveals a record of attempts at cure which reflects little credit on the medical profession, and it well illustrates the waste of energies wrongly directed. Instead of strenuously seeking to understand the nature of the patient's ill-health, modern medicine is content still to flounder along in the vain search for "a cure."

SHALL WE SLAUGHTER MILK COWS WHICH REACT TO TUBERCULIN?[1]

By A. CALMETTE,
M.D.,
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The Council of Hygiene of the Aisne Department, at its sitting on September 28, 1921, passed a resolution concerning which the Academy of Medicine was consulted by the Minister of Hygiene and the Assistance and Precautionary Society.

The resolution, already voted for by the same Assembly in 1904, is in favour of "rendering compulsory the tuberculin testing of cows whose

[1] This is the substance of a communication presented to the Académie de Médecine, Paris. The English version has very kindly been prepared from the original French paper by Dr. Barty King.—Editor *B.J.T.*

milk is destined for human consumption, and of destroying those who react to it."

It is apparent that if such a method were adopted and the percentage of milk cows reacting to tuberculin rose to a large figure for the whole French territory, the results would be serious. The measure would lead to such a diminution in milk production, and, consequently, to such a rise in the price of milk, that the feeding of children, aged persons, and invalids would be seriously affected.

In the light of new facts recently introduced by science into the rôle of human infection by bovine tuberculosis, and the modes of the spread of bovine tuberculous infection in stables, we are, once again, compelled to consider the question placed before us.

The Section of Hygiene of the Academy asked me to undertake this task. To fulfil it, I obtained permission from the scientific departments of the Ministry of Agriculture to utilize the departmental statistics which are sent to them and published in their reports. I owe many thanks to Professor Leclainche and to M. Boquet, the chief of my laboratory, who have helped me very efficiently in the work, the results of which I present to-day.

It is actually established that tubercle bacilli, adapted to bovine species, have acquired special morphological and cultural characteristics and a virulence which differentiates them clearly from tubercle bacilli adapted to the human species. The bovine type of bacilli are rarely met with in the tuberculous lesions of man. Varying in different countries, one finds them in from 4 to 10 per cent. of the various types of tuberculosis of childhood, but quite exceptionally—at the most 3 per 1,000—in cases of chronic tuberculosis in adults.

On the contrary, bacilli of the human type have a very slight virulence even in quite young animals of the bovine species; so much so that Behring and other investigators have proposed utilizing them for the vaccination of calves from the first weeks after birth. But as the subjects thus vaccinated are liable for a long time to discharge (of the bacilli) in their dejections, or even during periods of lactation of excreting bacilli virulent to man from their mammary glands, the dangers resulting therefrom become such a menace as to warrant abandoning the method.

The fact that in many countries where bovine tuberculosis is non-existent or extraordinarily rare, but where human tuberculosis is very prevalent, and children are never fed with cow's milk—such as in Japan, Indo-China, India, Turkey—is an evident proof of the quite pre-eminent importance of interhuman contagion.

If bovine tuberculosis is not an absolutely negligible factor of contamination for man, it only enters in a feeble way into the etiology of human tuberculosis, so that the fight against bovine tuberculosis offers

but a limited interest from the point of view of the protection of public health.

On the other hand, there is no doubt that the economic interests of agriculture must incite breeders to protect their cattle from bacillary infection so as to avoid losses therefrom, caused as much by the reduction of milk production as by the difficulty of fattening contaminated animals.

The importance of these losses is manifestly considerable. It is difficult to estimate them even approximately from the statistical documents of the French Ministry of Agriculture, but before the war they were not less than 20,000,000 per annum. In Great Britain, according to Brittlebank, they reached 25,000,000, and in the United States, according to A. D. Melvin, of the Animal Industry Office, 40,000,000.

The statistics of the Sanitary Veterinary Service give but very incorrect information as to the frequency of bovine tuberculosis amongst French grazing cattle, because the existence of lesions is only shown by the verifications made in the slaughter-houses and byres. The regular inspection of these establishments being far from guaranteed in every instance, and the observations of the veterinary surgeons only bearing on organic lesions most immediately apparent, a large number of tuberculous cases remain undiscovered.

In 1903 Nocarde and Leclainche estimated the number of tuberculous cattle at 10 per cent. A little later, in 1910, my collaborator, C. Guérin, undertook an inquiry at the veterinary departments, which showed that the average number of animals reacting to tuberculin was then about 16·5 per cent.

The facts revealed by the most recent official statistics show that the situation is actually still more serious.

In provinces where cattle are kept permanently in stables the proportion of those which react to tuberculin surpasses 40 per cent. In Seine-et-Marne, for instance, one finds 6,887 contaminated milk cows, distributed amongst 352 homesteads, and giving, in relation to the number of healthy cows, a proportion of 42·6 per cent. infected. In the higher regions, where there is large milk production and the animals only stay a short time in the stables, being out to pasture the greater part of the year, the infection is reduced from 30 per cent. to 16 per cent. Such is the case in Eure, where 665 contaminated cows, distributed among 35 homesteads, give 30·2 per cent. of infected cows.

In Seine-Inférieure, where 6,199 cows from 306 homesteads reacted positively to tuberculin, the proportion of infected animals in relation to the number of healthy is from 16·3 per cent.

In Morbihan the percentage is from 33·5 per cent. It attains 54·5 per cent. in Drôme and 62·5 per cent. in Haute-Saône.

On December 20, 1921, there were 18,268 infected farms in France, containing 144,065 tuberculous cattle, being an average of 8 animals per homestead. The mountainous regions with less cultivation Hautes-Alpes, Airège, Aveyron, Savoie, Cantal) are proportionately more affected than those of large or average cultivation, the reason being that the hygiene of the stables is particularly defective there. During winter the animals are crowded together in obscure sheds, chained up against dirty mangers, and soil themselves mutually with their dejections.

Without doubt their feeding is sufficient, but the solicitude of the peasants for their cattle has no other object than to obtain the maximum remunerative secretion of milk. The calves are taken away from their mothers almost immediately after birth. This custom, however irrational for the upkeep of the herd, has at least the happy effect of protecting them momentarily from certain infection.

The total bovine population of France in 1920 numbered 12,757,720 head, so that the number of tuberculous cattle is not less than 2,000,000 in our country. It seems, however, that Great Britain is no better situated. The statistics published by Sheridan Delépine show this quite clearly. These are the results obtained:

Of 100 animals of less than	1 year	3·4	per 100	react to	tuberculin.
" "	1 to 2 years	13·2	"	"	"
" "	2 to 3 years	24·1	"	"	"
" "	3 to 5 years	23·5	"	"	"
" "	5 to 9 years	48·9	"	"	"

It is interesting to compare these statistics with those relative to the human species, which show that the percentage of positive reactions to tuberculin, feeble in children, becomes so high with advancing age that, at any rate in towns, one can say that almost the whole population is more or less infected by the tubercle bacillus at adult age:

From 0 to	1 year	5·5	per 100	persons	give a	positive reaction.
" 1 to	2 years	20	"	"	"	"
" 2 to	5 years	55	"	"	"	"
" 5 to	15 years	77	"	"	"	"
Above	15 years	89	"	"	"	"

The conditions of the contamination of cattle in the stable being comparable to those of family cohabitation in the human species, it is evident that if the life of the cattle was of equal duration to that of man, nearly all of them living habitually in stables would react to tuberculin, like the inhabitants of our overcrowded towns in Europe.

It is no less evident that this positive reaction to tuberculin has no different signification for cattle than for man. It does not indicate that all the subjects which show a positive reaction are suffering

from serious tuberculous lesions, or are susceptible of propagating tuberculosis.

It simply reveals the existence of a bacillary seat of infection which, in the majority of cases, remains occult or latent, indefinably silent during the whole life, and in many cases heals when the subjects who have them are protected from occasions of reinfection for a sufficiently long time.

The eradication of bovine tuberculosis must, therefore, be specially faced from the economic point of view. It is for the veterinaries and breeders to solve ; they will attain it, not by irritating and inoperative rules, but by a better organization in the hygiene of the stables, by tracing it, and by the isolation or early slaughter of animals having contagious lesions.

One knows, moreover, that all the attempts made in France, as in other countries, to eliminate the tuberculous infection of stables or herds by the different systems extolled by Bang, Nocarde, and Siedamgrosky-Ostertag have ended in failure in spite of the care with which they have been applied in certain cattle-breeding establishments. It was thus, in 1895, the official authorities in Belgium flattered themselves that they would stamp out bovine tuberculosis by sanitary measures alone: systematic research of diseased and the testing of all cattle by tuberculin. Animals clinically affected should be slaughtered. Those which, without showing localizations, reacted to tuberculin should only be sold to butchers. When slaughtering was ordered, proprietors were to be compensated. The expenses thus occasioned rose to such a figure that the regulations had to be rapidly modified; the indemnities were diminished, the delay in slaughtering prolonged, and from being compulsory the tuberculin test became optional. But in two years, from 1895 to 1897, 9,280 animals had been killed with no result!

To-day it is unthinkable that cows showing no apparent or clinically discoverable lesions, whose udders are sound, whose milk contains no tubercle bacilli, and whose general state is excellent, should not be preserved for milk production and should be prevented from being sold under the sole pretext that they reacted to tuberculin! But it is infinitely desirable that all milk cows bearing contagious lesions should be examined by the sanitary authorities and immediately slaughtered.

On the other hand, if one applied the rule to all French grazing cattle that any milk cows which gave a positive tuberculin reaction should not be dealt with commercially, but should be reserved for the slaughterhouse, one immediately sees that the production of milk for the whole of our country would be reduced by a third, and that, all other conditions remaining equal, the price of milk, already so high, would rise in the same proportion without any appreciable advantage resulting to public health.

This latter would be, without doubt, much more effectively protected by the obligation to sell—especially for the feeding of children—only milk which had been deprived of tubercle bacilli by ebullition, except when such milk comes from cows frequently and regularly tuberculined, submitted permanently to the supervision of veterinaries, and under the condition that it should be delivered in sealed bottles.

It appears, therefore, that from a sanitary point of view the measure proposed by the Hygienic Council of the Aisne Department is unacceptable. It would result in depriving a large portion of the population of milk; the Academy of Medicine cannot approve it.

NOTIFICATION OF TUBERCULOSIS.

By REGINALD DUDFIELD,

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NOTIFICATION of tuberculosis did not, like Pallas Athena, spring from the brain of a bureaucrat pondering on the problem of preventing the disease in the seclusion of his office. As early as 1899, voluntary notification of pulmonary tuberculosis was introduced locally in Brighton and Manchester, a novel practice which spread gradually over the country. Notification was one of the principal items of the "tuberculosis campaign" inaugurated at the Marlborough House meeting in that same year, at which meeting King Edward VII. (then Prince of Wales) epigrammatically summed up the situation in the words, "If preventible, why not prevented?" It was only after voluntary notification had been in use for nearly ten years that compulsory notification was introduced in a tentative fashion by the Regulations of 1908. What may be called complete notification—*i.e.*, notification of all forms of the disease in all ranks of society—was not enforced until 1913.

Following the Report (in 1911) of the Royal Commission on Tuberculosis, the treatment of tuberculosis became a function of the municipalities, to whom were given powers to establish dispensaries and provide sanatoria. Such functions make the notification of the disease an absolute necessity, as without a full knowledge of the number of patients requiring treatment it is impossible to gauge the accommodation which has to be provided. The "stamping out" of tuberculosis is, however, not a question of isolation and treatment. The factors which are operative in producing predisposition to the disease, in favouring the spread of infection, in preventing recovery, etc., require

to be ascertained, and if possible, combated. The study of those important points is only possible by enquiry into the circumstances of the cases which are brought to the knowledge of the responsible officials by notification.

It may be urged that many of the questions referred to can be, and have been, studied by means of data drawn from institutions, and that general notification is mere surplusage. It is submitted that such data do not represent random samples of the tuberculous population, the circumstances attaching to admission to institutions inevitably introducing more or less selection and, therefore, bias. Data drawn from all ranks of society, and particularly from those ranks in which the financial circumstances permit of the provision of all forms of treatment, are required. Data from patients who have everything in their favour will help to indicate those factors which prejudice the hopes of patients less favourably situated. Moreover, there is no machinery for the collection, collation, and analysis of institutional data *en masse*. Until such time as we have a General Register Office of Disease comparable with that of Births, Marriages, and Deaths, the only material for study, failing notification, will be that obtainable from individual institutions, tainted with bias to a greater or less degree and drawn from populations too small to ensure the elimination of errors of sampling. Notification is, therefore, essential to the campaign against the disease, and must be universal. Nominally universal notification is provided for by the Tuberculosis Regulations, 1912, but the present system is far from perfect.

Excepting cases of surgical tuberculosis, notification is the gateway by which the majority of the tuberculous reach treatment in institutions maintained by the municipalities. As it is essential that there should be no delay in securing such treatment, there would appear to be every inducement for early notification. It is an unfortunate fact that, as has been shown by Lissant Cox[1] and the writer,[2] a considerable proportion of notified cases reach a fatal termination so soon after notification that it is not possible to do more than record the cases. In addition, a no small proportion of cases are not known to the authorities until after death. Of these latter cases some occur in lunatic asylums, where it is to be presumed they receive the only treatment possible having regard to their mental state. Others are patients admitted to hospitals and other institutions only a few days, or hours, before death, or are cases in which a definite diagnosis is only made after post-mortem examination. In the category of cases known after death only are the "transferred deaths," *i.e.*, deaths of persons dying in areas

[1] Cox, G. Lissant, "On the Notification of Tuberculosis," Trans., VII. Ann. Con. (1919) Nat. Assoc. Prev. Tuber., p. 38 *et seq.*

[2] Dudfield, "Reforms Needed in Notification of Tuberculosis," *Proc. Roy. Soc. Med.* (Epidem. Sec.), vol. xv., p. 75 (September, 1922).

other than those of their usual residence. In some instances it is found that the case of tuberculosis has been notified in the area where the patient died, but no notice of that fact has been sent to the "home" authority.

After allowing for the various factors leading to non-notification set out above, there remains a residue of failure to notify and of delay in notification which requires to be eliminated before the "tuberculosis scheme" can be regarded as fairly tested as to its efficiency. Lissant Cox,[1] from enquiries with reference to non-notified deaths, came to the conclusion that in 8·6 per cent. of the deaths there was no reasonable excuse for failure to notify, and that in 42 per cent. such failure was due to misunderstanding of the regulations or to a belief that the cases had been notified by other practitioners.

It has to be admitted (with regret) that certain practitioners are more or less definitely opposed to the notification of tuberculosis. The Regulations are made under Sections 135-140 of the Public Health Act, 1875, the penal provisions being contained in Section 140, which provides for a fine for "wilful" neglect only. Proof of wilful neglect would be exceedingly difficult in a court, if not practically hopeless. The only hope of converting the "anti's" lies in demonstrating the success of treatment—a possibility not yet available owing, it is believed, to the late stage (in the case of pulmonary tuberculosis at least) to which the disease is allowed to advance before treatment is sought; in other words, before notification.

Delay in notification may be due to two causes: either the patient seeks medical advice too late, or the practitioner fails to diagnose the disease. The dread of being labelled "tuberculous" still persists in the public mind. Patient education of public opinion is the only method by which dangerous delay in seeking advice can be eliminated. Proof that the success of treatment varies inversely as the interval between the onset of symptoms and the inception of treatment will be the most effective means of education. As regards the practitioner, closer study of the beginnings of disease, the use of new methods of diagnosis, such as X rays, complement fixation test, and closer co-operation with the tuberculosis service, should result in earlier diagnosis. It is probable, however, that it will be found advantageous to open the gateway to municipal treatment more widely by providing for the notification of all cases of tuberculosis as "suspect" only in the first instance, that is to say, by not waiting until a definite diagnosis can be arrived at before putting the patients under treatment. In London that suggestion is, in a sense, already in force, provision of observation beds having been made. If the suggestion were generally adopted, primary notifi-

[1] Cox, G. Lissant, Report of the Central Tuberculosis Officer of the Lancashire County Council for 1921, p. 8.

cation of definite tuberculosis would be made by the medical officer of the institution where the patient was under treatment, not, as a rule, by the private practitioner. Until the notification of a definite diagnosis had been received, official action would be limited to securing the admission of the patient to the appropriate institution, the enquiries now made after notification being postponed until the definite diagnosis had been made. Such alteration in the present system amounts to little more than doing what Rolleston advised,[1] *i.e.*, giving the patient the benefit of the doubt and getting him under treatment without delay. It may be surmised that if municipal treatment could be obtained generally without the patient being labelled "tuberculous" the public would seek such treatment more readily, *i.e.*, earlier than is done at present.

The excuse for failure to notify by A B that he thought C D had notified the case can only be met by amending Article V. of the Regulations, which, as it stands, is a fruitful source of trouble. Every practitioner should be required to notify every case of tuberculosis coming under his care, and to notify the case again in the event of the patient continuing under his care after removal to another district.

There is one other defect in the present system which demands attention. A given case is notified in one area and counted as a "primary" notification. The case may have been previously notified in *n* districts, but it is still counted for central statistical purposes as a "primary" notification. As a consequence there is no reliable information as to the actual number of new cases reported in any group of sanitary districts which are not under one and the same administration. The error becomes the greater as the group of districts is extended. The difficulty could be, in part, got over by requiring from each area periodical returns of the patients belonging to each district actually on the Tuberculosis Register, supposing such register to be systematically overhauled. It would then be possible to arrive at approximations of the true number of new cases reported during each interval between the periodical returns. A better plan would be the establishment of a Central Register of new cases, repeat notifications being excluded by scrutiny of each notification and comparison with an alphabetical index of names and ages. Such proposal involves the establishment of a General Register Office of Disease.

[1] Rolleston, Sir H. D., "The Rôle of the Medical Profession in the Prevention of Tuberculosis," *Internat. Journ. of Pub. Health*, 1921, ii., p. 469.

THE EDUCATION OF THE TUBERCULOUS PATIENT

By H. O. BLANFORD,

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"Dear Dr., I am recommending Mr.—— to apply for admission to your sanatorium. He should do well, as he is an early case, with slight signs at one apex. T.B. are present in the sputum, and he is only slightly febrile in the evenings. I have told him he will require about one month's stay at the sanatorium in order that he may learn how to live, and I hope he will then be able to carry on the treatment in his own home, which is under satisfactory conditions."

The above is a type of letter so frequently received by Medical Superintendents of sanatoria, that it may be of interest to enlarge upon the many fallacies it contains.

1. "*He should do well, as he is an early case.*" It is true that sanatorium statistics show the best results in Group I. cases—*i.e.*, early cases as judged by physical signs. It is decidedly unsound, however, to argue in an individual case that the prognosis is good because the physical signs are slight. There are so many other factors which must be taken into consideration and which affect the issue. The general condition and resistance of the patient, the family history, the presence or absence of financial and family worries, the possible existence of serious complications, and last, and perhaps most important, the strength of character and capacity for self-discipline of the individual concerned. These are only some of the all-important considerations which are going to affect the result of sanatorium treatment.

2. "*Only slightly febrile.*" Every patient dying of advanced pulmonary tuberculosis was once an early case and "only slightly febrile." The detection of this slight degree of fever in the early stages is of vital importance. Far from deserving the qualifying adverb "only," it should be looked upon as being of the utmost significance. Regarded as a sign of excessive auto-inoculation, it is an indication of the pressing need of the patient for control of the insidious attack to which his whole organization is exposed, and a blind man with ataxic gait, stumbling on the edge of a precipice, is not in more danger than the uninstructed "early" tuberculous patient with an unstable temperature.

3. "*One month's stay at a sanatorium in order to learn how to live.*" The fallacy of this very general idea lies in the fact that it is useless to learn how to live if you are going to die of pulmonary tuberculosis.

An untaught boy is not expected to learn how to earn his living by a month at school. He has to acquire the necessary education to fit him for this purpose by months and years of painful instruction. The sanatorium patient, similarly, requires long and painstaking instruction. To begin and end this instruction with maxims upon how to live would be comparable to setting the schoolboy to learn higher mathematics before teaching the multiplication tables. But the important point to bear in mind with regard to the tuberculous patient is that he is suffering from a very real insidious and dangerous complaint, which must be treated and treated successfully, and that the function of a Sanatorium is to treat the disease and, if possible, to arrest its activity. If this function is lost sight of, the sanatorium degenerates into a draughty hotel, concerned only with food, recreation, and killing time. Further, until we have at our command the specific cure for pulmonary tuberculosis, sanatorium treatment is the best form of treatment at our disposal, but it takes a long time. During this time the patient has to learn, not so much how to live, if by that is meant the value of an open window and the disadvantages of late hours, dissipation, etc., but how best to control the attacks of the tubercle bacillus, how to restore the balance between these attacks and his own natural resistance, and then, and then only, how to order his life under home conditions so that neither he nor his friends and relatives shall be exposed to a similar attack in future. He can do this, but he cannot "continue the treatment" of a complaint of which he has the experience only of one case, and that his own.

It will be seen, therefore, how much is involved in the education of the tuberculous patient. He must learn something of the causes and pathology of the complaint. The child fears the dark, being ignorant of what perils lurk in the hidden corners of the room. The medical student believes himself the victim of all the disorders of humanity which day by day present themselves to his vivid imagination. Inexperience and unfamiliarity are the parents of fear, but confidence and a prudent avoidance of danger are derived from a knowledge of the facts of life, whether physiological or pathological.

Patients have the most distorted ideas of what they conceive to be "medical etiquette." Frequently after an examination a patient will ask with diffidence if he may be informed of his condition. The more you take a patient into your confidence, the more confidence he will have in your directions. He should be informed as fully as possible, without creating panic, of the extent of the mischief and the crying need for unremitting effort in order to get well. It is necessary and right that the truth should not be hidden from him. A family doctor, in taking a second opinion, will often say, "If you do find anything definite, you will not tell them, will you, as they will be so

frightened." This policy, born of a misplaced kindness of heart, is a woefully short-sighted one. How can a patient be persuaded to take the necessary steps if he does not receive the needed stimulus of a little salutary fright?

In the interests of the health of the entire community, perhaps the most important item in the educative curriculum is knowledge regarding the infectivity of the disease and the means of prevention. The patient must be instructed in the nature of the tubercle bacillus, its minuteness, its means of dissemination, and its appearance under the microscope. Even among the most educated classes astonishing ignorance and carelessness prevail. A lady who knew she was suffering from pulmonary tuberculosis and that tubercle bacilli were present in the sputum took rooms at a farm in the country while waiting for admission to a sanatorium. Feeling ill and lonely at night, she asked her hosts to allow their young daughter to sleep with her, and the girl was allowed to sleep not only in the same room, but in the same bed. The prevention of a callous risk such as this seems to justify even the extreme tuberculosis-phobia which may result from an over-emphasis of the infectivity of the complaint.

Every step of the treatment carried out in the sanatorium should be explained and the reason for it given. The exercise, the rest, the open air, the food, the restrictions, the prohibitions, all have their reasons, and all must be expounded. The seed may appear to fall upon stony ground. Many will exaggerate points of minor importance, and ignore others of more vital significance. Some will misquote directions and utterly fail to understand the whole situation. Years afterwards, however, a patient may say, "You told me so-and-so, and I've never forgotten it," and the mass of ignorance, prejudice, and inertia is proved after all to be capable of disintegration.

Instruction in some of the more typical early signs of the disease is not without its use. Every sanatorium knows how a successfully treated case is a walking advertisement and an agent of propaganda. Mrs. Smith comes for treatment because Mr. Jones in the neighbourhood did so well. Early signs then may be enlarged upon and explained at some length as regards their relative significance, because the individual should know what is and what is not of importance. He finds difficulty in understanding that a fluttering sensation and pain over the heart is not necessarily a sign of impending dissolution, whereas the slight headache and sense of fatigue, accompanied by an apparently negligible rise of temperature, receives from his doctor quite unmerited attention. Well versed in the importance of the recognition of early signs, he will be a more useful, because more reliable, witness and agent in persuading others to follow the path to health and accompanying happiness which he himself has successfully trodden.

Ultimately, with resistance restored, health apparently regained, physical signs abolished or reduced to a minimum, the patient receives the coveted distinction "arrest," and is ready to be taught "how to live." He does not require to "carry on the treatment," and fortunately so, because the most careful and intelligent patient is incapable of doing this. He does, however, require to live the right kind of life under the right conditions, and valuable instruction on these points may well be given. Given ample financial resources, the maintenance of health should be a matter only of good sense and self-control. Without these qualities health will not be maintained, with or without plenty of money. Self-control and a prudent disposal of out-of-work hours are of the first importance in carrying on the good work initiated by the sanatorium régime.

SANATORIUM TREATMENT CONTRASTED WITH HOME TREATMENT.

AFTER-HISTORIES OF 4,067 CASES.

By G. LISSANT COX,
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THERE is at the present time much divergence of opinion in the country as to the value derived by patients from sanatorium treatment. However satisfactory and encouraging may be the immediate results of sanatorium treatment, they remain of secondary importance to the after-results. In order to obtain data on which to form an opinion as to the respective merits of sanatorium treatment as against other forms of treatment or no treatment, it would be necessary to compare one group of patients that has undergone sanatorium treatment with another group, similar in age, sex, environment, location, and severity of the disease, that has received different treatment. An exact scientific experiment on these lines may not be possible for obvious reasons, but what I have done here is to contrast groups of patients, as nearly as possible similar, that have received treatment under the tuberculosis scheme of the Lancashire County Council.

Through the dispensary organization, the position, as at the end of 1921, has been ascertained of all patients diagnosed by the consultant tuberculosis officers as suffering from pulmonary tuberculosis residing in the Administrative County of Lancaster, who made application for treatment during the five years 1914-18. The diagnosis has been made by the same tuberculosis officers throughout the period. Certain

ADMINISTRATIVE COUNTY OF LANCASTER.

ANALYSIS OF AFTER-HISTORIES OF (1) 2,310 PATIENTS WHO HAVE COMPLETED A COURSE OF SANATORIUM TREATMENT, ASSOCIATED WITH DISPENSARY TREATMENT OR SUPERVISION, AND (2) 1,757 PATIENTS WHO HAVE UNDERGONE TREATMENT AT HOME OR IN INSTITUTIONS OTHER THAN SANATORIA.

Stage[1] of Disease on Application and Sputum.[2]	Age Groups.	Sex.	Position at end of 1921 of Adult Patients who applied during 1914-18 (five years). Patients who completed two months or more *Sanatorium* Treatment. Net[3] number treated.	Fit for Work.	Unfit for Work.	Died.	Patients who received *Home* Treatment (Non-Sanatorium Cases). Net[3] number treated.	Fit for Work.	Unfit for Work.	Died.
				%	%	%		%	%	%
(*a*) I. and I.S Positive	15-25	M	74	36·5	6·7	56·7	26	19·2	7·7	73·1
		F	45	17·8	4·4	77·8	15	13·3	13·3	73·3
	25-45	M	190	44·7	10·5	44·7	98	44·9	4·1	51·0
		F	111	36·2	14·4	48·6	41	41·5	7·3	51·2
	45-65	M	64	43·7	23·4	32·8	30	13·3	3·3	83·3
		F	7	57·1	14·3	28·6	6	33·3	—	66·6
	Total	M	328	42·7	12·2	45·1	154	34·4	4·5	61·0
		F	163	32·5	11·6	55·8	62	33·9	8·1	58·0
Neg. or None	15-25	M	124	83·1	6·4	10·5	75	73·3	4·0	22·7
		F	117	81·2	6·8	11·9	55	69·1	5·4	25·4
	25-45	M	196	82·1	10·2	7·6	147	73·5	7·1	19·0
		F	243	82·3	7·4	10·3	102	75·5	5·8	18·7
	45-65	M	62	67·7	11·3	20·9	59	67·8	6·8	25·4
		F	29	96·5	—	3·4	16	50·0	6·2	43·7
	Total	M	382	80·1	9·2	10·7	281	72·2	6·4	21·3
		F	389	83·0	6·7	10·3	173	71·1	5·8	23·1
(*b*) II. and II.S Positive	15-25	M	96	6·2	8·3	85·4	78	2·6	2·6	94·8
		F	92	14·1	6·5	79·3	94	4·3	—	95·7
	25-45	M	272	22·8	12·9	64·3	226	9·3	3·1	87·6
		F	172	25·0	4·1	70·9	152	11·2	1·3	87·5
	45-65	M	112	22·3	16·1	61·6	163	10·4	9·2	80·4
		F	28	50·0	3·6	46·4	29	10·3	10·3	79·3
	Total	M	480	19·4	12·7	67·9	467	8·6	5·1	86·3
		F	292	23·9	4·8	71·2	275	8·7	1·8	89·5
Neg. or None	15-25	M	32	75·0	9·4	15·6	31	41·9	3·2	54·8
		F	37	59·4	13·5	27·0	45	22·2	2·2	75·6
	25-45	M	71	56·3	15·6	28·1	83	31·3	7·2	61·5
		F	73	64·4	12·3	23·3	69	40·6	2·9	56·5
	45-65	M	49	57·1	16·3	26·5	97	32·9	9·3	57·7
		F	14	64·3	28·6	7·1	20	70·0	10·0	20·0
	Total	M	152	60·5	14·5	25·0	211	33·6	7·6	58·8
		F	124	62·9	14·5	22·6	134	38·8	3·7	57·5

[1] Classified according to the system of Turban-Gerhardt, and further subdivided into cases with slight and severe constitutional symptoms, as suggested by Philip.

[2] Where sputum is shown as positive, tubercle bacilli have been found at some time during treatment.

[3] Net number arrived at after deducting patients left county, untraced, ceased treatment for other than medical reasons, died from other than tuberculosis, and diagnosis not confirmed.

deductions have had to be made from the gross number under review on account of removals out of the county, untraceable cases, patients who ceased treatment for other than medical reasons, or died from causes other than tuberculosis, and for patients whose diagnosis subsequently was not confirmed. A net number of 4,067 patients remains, and is divided in the table into two groups: (1) 2,310 patients who have completed a course of sanatorium treatment, associated with dispensary supervision or treatment; and (2) 1,757 patients who have undergone treatment at home or in institutions other than sanatoria.

So that the data upon which the table is based may be clear it is necessary to state: (*a*) The sanatorium cases are confined to patients who have received sanatorium treatment in the "true" sense—that is, distinct from residence in a "pulmonary hospital" or observation hospital, where an arrest of the disease is not expected; (*b*) only patients who remained in a sanatorium two months or more have been included; (*c*) the average duration of sanatorium treatment is four months; (*d*) some patients received two, three, or more periods of sanatorium treatment, and in determining the duration these have been added together; (*e*) a few patients suffering from both pulmonary and non-pulmonary tuberculosis who received sanatorium treatment for their pulmonary condition are included; (*f*) some of the non-sanatorium cases have received treatment in "pulmonary hospitals" or observation hospitals, or have had a stay of less than two months in a sanatorium.

Conclusions.

1. As the result of the analysis of 4,067 histories of adults who commenced treatment during the five years 1914-18, so far as comparison is possible, patients in the *early* and *intermediate* stages of pulmonary tuberculosis who have undergone a course of sanatorium treatment, even for three or four months, fare appreciably better in health in later years than those who did not receive such form of treatment. Thus, of 1,047 cases in the early and intermediate stages with *negative or absent* sputum commencing treatment during the five years 1914-18:

14·0 per cent. of the sanatorium cases had died at the end of 1921;

37·7 per cent. of the non-sanatorium cases had died at the end of 1921;

and of the 1,263 patients with *positive* sputum:

61·2 per cent. of the sanatorium cases had died at the end of 1921;

81·3 per cent. of the non-sanatorium cases had died at the end of 1921.

The difference is very considerable in the negative or absent sputum cases, and 20 per cent. better in the positive cases. If the sanatorium treatment and home treatment groups were really scientifically comparable, it would appear from the table that in *certain* age groups of the *positive* cases sanatorium treatment, merely regarded from the point of prolongation of life, is not much better than home treatment. It must never be forgotten, however, that from the more important side of prevention of the disease a stay in a sanatorium has, in the main, a definite educational result on the patient, his family, and his friends.

2. In both sanatorium and non-sanatorium cases early diagnosis is a very important factor in the successful treatment of pulmonary tuberculosis.

3. In both sanatorium and non-sanatorium cases, patients with a negative or absent sputum throughout treatment are much more likely to remain fit for work, and less liable to succumb to the disease than those with tubercle bacilli in the sputum.

4. In the sanatorium cases the mortality from pulmonary tuberculosis is greater among patients with a positive sputum, aged between fifteen and twenty-five years, than in the other age groups.

ASSOCIATIONS AND INSTITUTIONS.

TUBERCULOSIS COLONIES AND VOCATIONAL TRAINING CENTRES.

THIS journal in its issue for April, 1918 (Vol. XII., No. 2, pp. 59-76), contained a Symposium on "Colonies for the Tuberculous," in which a series of opinions contributed by experts was presented.[1] References have also been made from time to time to special reports on tuberculosis colonies,[2] and descriptions of some of them have been given. At the present time professional opinion is turning to the tuberculosis colony with a new hope. Colonies and training centres are now on their trial. It would seem likely that under effective management they may prove valuable links in the chain which is being forged for the fettering of the tuberculosis foe. In the spring of 1922 the Ministry of Health issued Circular 307, dealing with the treatment and training of tuberculous ex-service men. This official pronouncement is so important, as indicating the attitude of the Ministry of Health, that we reproduce it here. The circular is signed by A. B. Maclachlan, Assistant Secretary of the Ministry.

"I am directed by the Minister of Health to state that he has been in consultation with the Treasury and the Ministry of Pensions in regard to certain special arrangements which have been made for the concurrent treatment and vocational training of ex-service men suffering from tuberculosis, and I am to enclose herewith, for the information of the council or joint committee, and of their tuberculosis officers, copies of a circular issued by the Ministry of Pensions and of the forms referred to therein.

"1. Arrangements have been made for the vocational training of such men in the following courses and at the sanatoria indicated below, at which special training sections have been provided at the cost of the Government:

"(1) Market gardening, poultry, pig, and bee keeping: Burrow Hill Sanatorium, Frimley (18 places); pig and poultry keeping: Middleton Sanatorium, Ilkley (14 places).

"(2) Rural carpentry: Burrow Hill Sanatorium, Frimley (12 places); Middleton Sanatorium, Ilkley (12 places); the National Sanatorium, Benenden, Kent (12 places); Liverpool Sanatorium, Kingswood (12 places).

"(3) Furniture repairing: Holywood Hall Sanatorium, Wolsingham, Durham (20 places); Lenham Sanatorium, Lenham, Kent (20 places); the Borough Sanatorium, Leicester (20 places); Maltings Farm Sanatorium, Nayland (16 places); West Heath Sanatorium, Birmingham (20 places); Middleton Sanatorium, Ilkley (24 places).

"(4) House repairs: Liverpool Sanatorium, Kingswood (16 places); Holywood Hall Sanatorium, Wolsingham (20 places); Lenhan Sanatorium,

[1] See also "A Tuberculosis Colony in the Making," by Dr. Varrier-Jones (*B.J.T.*, January, 1919, Vol. XIII., No. 1, pp. 14-21).

[2] See Dr. Chapman's Report to L.G.B. (*B.J.T.*, July, 1919, Vol. XIII., No. 3, pp. 131-136).

Lenham, Kent (20 places); Crooksbury Sanatorium, near Farnham (20 places); Burrow Hill Sanatorium, Frimley (30 places); West Heath Sanatorium, Birmingham (20 places).

"(5) Tin smithing, art metal work, etc.: West Heath Sanatorium, Birmingham (20 places).

"(6) Brush and basket making: The National Sanatorium, Benenden, Kent (28 places).

"(7) Jewellery, watch, clock, and china repairing: Liverpool Sanatorium, Kingswood (12 places); Maltings Farm Sanatorium, Nayland (24 places).

"These courses have been designed to give men desiring to work on their own account in suburbs, country towns, or large villages, a general training which should enable them to earn a living. It is not anticipated that the training given will make men commercially successful at once, as they will need to acquire rapidity of action in addition to the skill which they will obtain during training. The training given will teach patients the necessary principles, and will give them such knowledge of the subject that commercial success should follow with experience. The first five of the above-mentioned courses involve a certain amount of moderately heavy work, and care should therefore be taken to recommend for training in these courses only patients who are likely to be able to carry out such work without ill-effect. The remaining two courses involve comparatively light work, and are suitable for less robust patients.

"2. Particulars as to the time limits for applications for admission to these courses will be found in paragraph 3 of the enclosed circular issued by the Ministry of Pensions. With regard to the question of the eligibility of men for these courses, I am to refer to paragraph 2 of that circular, and to draw attention to the following points: (*a*) No patient should be recommended for a course of vocational training unless he has previously undergone a course of sanatorium treatment. The patient should also be capable of doing at least four hours' work daily without ill-effect. (*b*) It should be remembered that the great majority of tuberculous patients are damaged lives, and that it will be difficult for patients, even with the aid of war pensions, to make good in competition with healthy workers. It is therefore important that only those patients who have a reasonable prospect of securing arrest of the disease should be selected for admission to a course of vocational training. Care should be taken to recommend only those patients who appear to be temperamentally fitted for a course of vocational training, and who are likely to persevere. A thorough study of each patient is requisite before he is recommended for such a course in order that the risk of sending unsuitable patients may be minimized. (*c*) In selecting a course of training for any particular patient, great care should be taken to select one adapted to the capacity and circumstances of the patient, and the prospects of the patient being able and likely to follow the occupation subsequently should be duly weighed. As far as possible, patients should be given training in the course they select, but as the number of places available for each course is limited, this may not be practicable in all cases, and the patient should indicate whether he is willing to receive training in another course should there be no vacancies for training in the course he prefers. The procedure which will be adopted to secure vocational training for a patient is set out in paragraphs 4 to 9 of the accompanying circular issued by the Ministry of Pensions.

"3. When the tuberculosis officer is advised by the D.C.M.S. (Tuberculosis) that a patient has been accepted for vocational training by the Ministry of Pensions and of the name of the sanatorium to which he is to be sent, the tuberculosis officer should send the medical report on form M.P.M.S.D. 119 to the medical superintendent of the sanatorium concerned, and should arrange for the admission of the patient for training in the selected course. If, however, there is no vacancy available, the medical superintendent will place the patient's name on the waiting list for the required course, and will advise the tuberculosis officer when a vacancy occurs. Unless the patient can be admitted at an early date, the tuberculosis officer should advise the local War Pensions Committee accordingly. If the date fixed for admission

is more than eight weeks later than the date of the previous examination of the patient by the tuberculosis officer, it will be necessary for him to re-examine the patient, and complete Part I.A of the form M.P.M.S.D. 118. If he is satisfied that the patient is still suitable for training and is willing to accept the vacancy, he will complete the arrangements for the man's admission, and will send the form to the local War Pensions Committee. If, however, he finds it unnecessary or undesirable that training should now be given, he will so inform the patient and the medical superintendent, and will send the form to the D.C.M.S. (Tuberculosis).

"4. The first month of the patient's residence at the training section will be regarded as a probationary period, during which the patient can get some actual experience of the work he proposes to take up, and the authorities of the institution can study the suitability of the patient for the course proposed. If the patient does not elect to continue the course of training, or if the sanatorium authorities consider that he is unsuitable for training, either owing to temperament or physical condition, he should be discharged during this period. If during this probationary period the medical superintendent decides that the course of training originally suggested is unsuitable, but considers that the patient is suitable for some other course of training, he will communicate with the tuberculosis officer on the subject, and if the tuberculosis officer concurs in the recommendation, he will submit the proposal to the D.C.M.S. (Tuberculosis). Unless arrangements can be made for an early transfer, the patient will need to be discharged from the training section. No patient will be eligible for more than one transfer under this provision.

"5. It is possible that a patient may relapse during his course of training, and that it may be desirable to transfer him to the sanatorium proper for special attention. If the medical superintendent considers that the patient will be able to resume training within a month, the vacancy in the training section may be kept open for him; otherwise, the medical superintendent will take steps to fill the vacancy, and will inform the tuberculosis officer upon whose recommendation the patient was admitted to the training section. In these circumstances the council responsible for the patient will have the option of retaining the patient in the sanatorium or of transferring him to some other institution. If the patient after discharge from the training section on grounds of ill-health subsequently recovers and becomes fit to resume training, he will be readmitted to the training section when a vacancy occurs in priority to men whose names are on the waiting list. The council will be charged for the period during which the patient is under treatment in the sanatorium proper at the rate approved by the Minister for that institution, the cost being refunded to the council under the general arrangements made for the residential treatment of ex-service men suffering from tuberculosis.

"6. In no case may a course of vocational training exceed twelve months in duration. If the authorities of the sanatorium certify that a patient has become an efficient workman before he has completed twelve months' training he may be discharged. All courses of training must be completed by June 30, 1924, and no patient will be admitted to training whose course cannot be completed by that date. No patient who has completed a course of vocational training, or who has started but not completed such a course, will be eligible for a further course of vocational training, the only exception to this rule being that of a patient who is transferred to some other course during the probationary period, as provided in Section 4 above.

"7. No payment will be made to trainees by way of wages or remuneration for work done during the course of training, as the course of training should be regarded as of the nature of an intensive apprenticeship. A trainee who satisfactorily completes one of these courses of training, which have been approved by the Ministry of Pensions, will be eligible for training bonus and grant for tools, subject to the conditions set out under Sections 14 to 17 inclusive of the enclosed circular issued by the Ministry of Pensions.

"8. In the case of a metropolitan borough the tuberculosis officer should transmit the recommendation of a patient for a course of training on form M.P.M.S.D. 118, and a medical report on form M.P.M.S.D. 119, to the medical officer of the London County Council, who, if he concurs, will send them to the D.C.M.S. (Tuberculosis). After completing Part II. of M.P.M.S.D. 118, the D.C.M.S. will return the forms to the county medical officer, who will make the necessary arrangements with the institution concerned and inform the patient of the date of admission. The county medical officer will then return form M.P.M.S.D. 118 to the tuberculosis officer, so that the latter may fill in Part III. of the form and return it to the local War Pensions Committee. Unless the patient can be admitted at an early date the county medical officer should advise the tuberculosis officer, and the latter should inform the local War Pensions Committee accordingly. The county medical officer will arrange for any re-examination which may be necessary, in accordance with the arrangement set out in Section 3 above, prior to the admission of the patient.

"9. At the end of each period of four months after the admission of the patient the medical superintendent will furnish a report to the tuberculosis officer, or, in the case of London patients, to the county medical officer of health, stating whether the patient's training has been so far successful, and whether he is seriously endeavouring (within the limits of his physical capacity) to fit himself for the occupation in which he is being trained. Apart from these periodical reports, the medical superintendent should report if at any time he considers that a patient lacks capacity or serious intention to benefit from the course. These reports should be transmitted by the tuberculosis officer to the D.C.M.S. (Tuberculosis) without delay.

"10. Payment for the treatment and training of all patients admitted to the training sections under the arrangements above described will be made by the Minister of Health direct to the authorities of the institutions at which the training sections have been provided."

The names and addresses of the D.C.M.S.'s (Tuberculosis), and the areas for which they act, are as follows:

Dr. D. G. M. MUNRO, 55, Lionel Street, Birmingham: Derbyshire, Herefordshire, Leicestershire, Lincolnshire, Northamptonshire, Nottinghamshire, Rutlandshire, Shropshire, Staffordshire, Warwickshire, Worcestershire.

Dr. G. B. PRICE, Burton Court, Chelsea, S.W. 3: London, Bedfordshire, Berkshire, Buckinghamshire, Cambridgeshire, Essex, Hertfordshire, Huntingdonshire, Isle of Wight, Kent, Middlesex, Norfolk, Oxfordshire, Southampton, Suffolk, Surrey, Sussex.

Dr. W. L. LYALL, 122, George Street, Edinburgh: Cumberland, Durham, Northumberland.

Dr. F. WEBB, 76, Newton Street, Manchester: Cheshire, Lancashire, Westmorland, Yorkshire.

Dr. HALLIDAY SUTHERLAND, Clifton Down Buildings, Bristol: Cornwall, Devonshire, Dorsetshire, Gloucestershire, Somersetshire, Wiltshire.

Through the courtesy of the Ministry of Health, we have been favoured with the following tables:

TABLE I.—RESIDENTIAL INSTITUTIONS WHERE TREATMENT COMBINED WITH TRAINING IS PROVIDED.

Name of Institution.	*Address to which Communications with regard to the Institution should be sent.*	*Occupations in which Training is given.*	*Name of Medical Superintendent.*
Berks and Bucks Joint Sanatorium, Peppard Common.	The Clerk to the Berks and Bucks Joint Sanatorium Committee, Shire Hall, Reading.	Horticulture, fruit gardening.	Dr. Esther Carling.
Cambridgeshire Tuberculosis Colony, Papworth.	Dr. P. C. Varrier-Jones, Cambridgeshire Tuberculosis Colony, Papworth, near Cambridge.	Window-ticket and show-card work, painting, printing, poultry farming, cabinet making, carpentry and joinery, leather work, boot repairing.	Dr. P. C. Varrier-Jones.
Liverpool Sanatorium, Kingswood.	The Secretary, Liverpool Hospital for Consumption, Mount Pleasant, Liverpool.	Poultry keeping, fruit farming, horticulture.	Dr. A. Adams.
Englethwaite Hall Colony, Cumberland.	The Clerk of the Cumberland County Council, The Courts, Carlisle.	Poultry farming, market gardening, joinery and cabinet making, boot and shoe repairing, pig keeping, clog making.	Dr. M. Fraser.
Preston Hall Sanatorium and Training Colony, Aylesford, Kent.	Miss C. F. C. Phillpotts, Secretary, Industrial Settlements (Incorporated) for Disabled Soldiers and Sailors, 72, Victoria Street, S.W. 1.	Garden work, poultry farming, boot repairing, cabinet making, pig farming.	Dr. T. L. Bonar.
Tuberculosis Hospital and Training Colony, Barrowmore Hall, Great Barrow, near Chester.	L. Royle, Esq., Secretary, East Lancashire Joint County Committee, 3, St. James's Square, Manchester.	Woodwork, poultry keeping, gardening.	Dr. S. Tinker.
Stanninghall Training Colony, Norfolk.	The Secretary to the Norfolk Joint Sanatorium Committee, Stanninghall Farm, Norwich.	Carpentry, cabinet making, poultry farming, market gardening, fruit farming.	Dr. W. B. Christopherson.
Hull After-Care Colony, Walkington, near Hull.	L. Lewenstein, Esq., Secretary, 6, Wright Street, Hull.	Market gardening, poultry farming, pig keeping.	Dr. J. A. Raeburn.

TABLE II.—VOCATIONAL TRAINING SECTIONS FOR TUBERCULOUS CASES.

Centre.	*Medical Superintendent.*
Liverpool Sanatorium, Frodsham, Cheshire	Dr. A. Adams.
Holywood Hall, Wolsingham, Durham	Dr. G. S. Dodgson.
National Sanatorium, Benenden, Kent	Dr. H. Spurrier.
Lenham Sanatorium, Kent	Dr. E. L. Sandiland.
Leicester Sanatorium	Dr. Killick Millard.
Maltings Farm Sanatorium, Nayland, Essex	Dr. Jane Walker.
Crooksbury Sanatorium, Surrey	Dr. F. R. Walters.
Burrow Hill Colony	Dr. A. H. Macpherson.
West Heath Sanatorium, Birmingham	Dr. J. Stevenson.
Middleton Sanatorium, Ilkley, Yorks	Dr. T. Campbell.

In order to indicate something of the progress which is being made in the development of colonies and training centres for tuberculous cases we have secured concise statements from the medical superintendents of a number of these institutions. Such authoritative communications will indicate the aims of these comparatively new enterprises, the methods employed, the results attained, and the special difficulties of the work.

THE CAMBRIDGESHIRE TUBERCULOSIS COLONY.

By P. C. VARRIER-JONES,

M.A., M.R.C.S., L.R.C.P.,

Medical Director of the Cambridgeshire Tuberculosis Colony, Papworth Hall, Cambridge.

From the earliest days of the Papworth Colony one central idea has like a thread run through the work, although it was impossible at first to see exactly what form the pattern would take in its completed tissue. The aim has always been not merely to keep a patient alive, but to give him a life worth living. Even in the experimental colony at Bourn, without elaborate tools or workshops or industrial organization, the patients began to do *useful* work and to regain confidence. With this object steadily in view, the industrial and residential colony at Papworth has been built up. Treatment and training are so designed as to fit the patient for a career satisfactory to himself and useful to the community. It is recognized that in many cases—in the majority, indeed, of "middle" cases—this is impossible in the economic stress of ordinary industrial life. The colony, therefore, provides a sheltered existence for the damaged man, while a home for his wife and family and employment for himself follow upon his course of treatment. It is impossible for a partially trained consumptive to compete with healthy labour; a whole set of conditions must be assured, and this "set of conditions" constitutes what is known as "sheltered employment." Papworth is not a training colony in the ordinary acceptance of the term, and does not profess to do that which is impossible. It is a training colony in the sense that it *undertakes to train a man sufficiently to enable that man to earn his living under sheltered conditions, and then provides all those conditions* (including suitable employment and a living wage) that make for the permanent arrest of the disease. Without this complete system of after-care a training colony stops short at the critical point, and its work, however good up to this point, is in the great majority of cases thrown away.

HAIRMYRES TUBERCULOSIS COLONY, LANARKSHIRE.

By JAMES JOHNSTONE,
M.B., CH.B., D.P.H.,
Resident Physician-Superintendent of the Colony.

Hairmyres Colony is 580 feet above the sea-level, and has accommodation for 250 cases of early tuberculosis, 100 of these being children, who receive education at an open-air school. The grounds extend to 320 acres, and there are four pavilions built on the butterfly principle, facing south. All cases must be fit for light work. The labour is graduated, commencing with two hours, and working up to five or six hours a day. Patients are employed at the following occupations: Market gardening, poultry farming, pig rearing, and forestry. A large number of patients are drawn from the mining class, and some detractors say, "What is the use of training a man in an outdoor occupation for which he is not suited?" The answer to this is that we have now erected industrial workshops, where men receive a vocational training in motor repairing, cabinet-making, boot repairing, basket and toy making. These workshops are built on the latest principles, all the machinery being driven by electricity. There is a model farm attached to the colony with a herd of tubercle-free pedigreed cows. For recreation there are a croquet lawn, putting green, and a 9-hole golf course; also a large recreation hall with a cinema. Full particulars with illustrations are available in a booklet describing the scheme, prepared by Mr. W. E. Whyte, Middle Ward, District Clerk, Hamilton, and published in 1919.

DELAMERE TRAINING COLONY, FRODSHAM, CHESHIRE.

From ALFRED ADAMS,
M.D., CH.B., D.P.H.,
Resident Medical Officer of Liverpool Sanatorium, etc.

The Delamere Training Colony was first made possible through the generosity of one of our Lancashire merchants for the training, primarily, of ex-service men in 1917, and, after many departmental delays and difficulties, was opened for the reception of patients in September, 1920. Two schemes of colony training were fully considered by the committee—(1) industrial, and (2) for training. In the former, the ideal was to form a permanent home for the men and

families where co-operative workshops would supply employment and remuneration for the work done, and the men would be removed from their unhealthy surroundings, and a possible source of danger to others, to healthier surroundings and a permanent home. This scheme was definitely turned down, as fulfilling the conditions, and removing all necessary cases from the area selected, would result, not in a village settlement, but in a large city with impossible financial burdens, besides delaying unduly the period for getting into working order. The choice was therefore made of a training colony, where selected cases would be taken and receive prolonged treatment with training in suitable occupations, and in which it would be possible for the men to compete later in the open labour market. The first batch of patients trained was discharged late in 1921, and so far the results have been satisfactory. The trades taught are watch and clock repairing, rural carpentry, house repairs, gardening, poultry, and pig culture. The three former trades have been entirely devoted to patients sent by the Ministry of Health under the arrangement of Circular 307, and at present each of these departments is full and the work progressing satisfactorily. In the training colony, in contradistinction to the industrial colony, the main scheme of training should be the avoidance of repetition work, and the endeavour to teach a man the elements of a trade which he can follow without the aid of factory machinery, and to keep up an interest in the work by opening up new points of information and practical work so that the inevitable monotony is reduced to a minimum. An observer going round the two types of workshops will at once notice the difference; in the one case, a man has simply routine repetition work feeding a machine, and is definitely not learning a trade, and if he decides to leave that shop, he could only obtain employment on a similiar machine, which usually restricts his choice to some large manufacturing centre.

Here our endeavour is to make an independent workman who can return to the city or village with a trade in his hands which he can use without having to obtain employment in a factory. The difficulty in our position is the before and after-care treatment. Almost invariably we find our patients on admission have done no work since they were discharged, but attend the dispensary or medical referees, and our first endeavour is to restore their self-respect, and teach them they can work without damage to themselves or their pensions. But the greatest responsibility for the success of the scheme rests on the work of the After-Care Committee. So far our experience is that where we have a good After-Care Committee, as we have in two or three areas, especially in one Lancashire borough, where the clerk to the Pensions Committee takes a personal interest in each case, our results were excellent, and we find the men settled and doing well in their different

trades. In other areas where an endeavour has been made to follow up the results, we find, on enquiry, some patients have rapidly reverted. One reason given for this is the delay in getting the grant for tools and assisting the men, due to departmental enquiries and the working of the Civil Liabilities Board; and if arrangements could be made by which the grant was given immediately the man was discharged fresh from the work of the colony, and while enthusiastic, I am convinced that it will be one more step towards solving the problem of return to civil life. The garden, pig, and poultry departments still receive patients under the terms of Circular 30/T of the Ministry of Health, and local authorities are empowered to send suitable cases for this course to the institution, the cost of treatment being refunded by the Ministry. There is large scope here for training as the institution owns plenty of land, and a few vacancies still exist in this department. The colony adjoins the Liverpool Sanatorium, Delamere Forest, and is under the same administration, and patients showing any disturbances of medical condition are at once removed to the sanatorium and treated there. The social side of the men's life is catered for by a recreation club with allied interests. A branch of the British Legion is being formed, and a debating society has been in existence for some time, the debates being well attended and great interest shown. The sports committee arranges for the different games, and the recreation club has excellent accommodation with a live canteen in which the men can purchase all their requirements and entertain their friends at practically cost price, the entire control of the administration being in the hands of a committee elected by the men; and the financial position is absolutely sound and allows for the necessary expansion of their interests.

THE HULL TUBERCULOSIS AFTER-CARE TRAINING COLONY.

By JAMES A. RAEBURN,
M.D., D.P.H.,
Chief Tuberculosis Officer for Hull; Medical Superintendent of the Hull Tuberculosis Sanatorium; and Superintendent of the Hull After-Care Training Colony.

I believe I am safe in asserting that all working for the eradication of tuberculosis agree that cases suffering from the disease should be kept under supervision throughout their lives, otherwise treatment in the large proportion of cases does no more than delay the fatal end. In the case of those in whom the disease has become quiescent or arrested this does not mean that continuous active treatment is necessary, but it does mean that they must live in hygienic surroundings and engage only

in healthy work, and that work wisely selected and not too strenuous for them. We need to have clear views regarding the purpose of a training colony for tuberculous subjects. In a proportion of cases the patient is capable of learning a new occupation where the necessary conditions for maintaining his health obtain. The training colony is established to meet the needs of such as these. The Hull After-Care Training Colony was established in 1917, and valuable experience has been gained during these years regarding the points to be aimed at. The colony teaches market gardening combined with pig and poultry keeping. In these subjects theoretical lectures are given in conjunction with practical work. There is also a boot and shoe repairing department. Training is carried on in each case for a year. Work on the land and amongst animals is the ideal occupation for consumptives, but I find that many town-bred persons do not take kindly to such, and these may be allowed to choose some form of mechanical work. There is great need for a judicious selection of colonists. Many of those who apply for training have the disease so advanced that there is no hope of their ever being fit to earn their living at any work. Another category includes men who are without ambition and devoid of any zeal for industry, or not possessing qualities necessary for success. These would probably be failures in whatever they attempted. If these colonies are to justify the expense incurred, I consider that a rather more strict selection than has hitherto been the practice ought to be insisted on before applicants are admitted. A record of good character, intelligence, and previous industrious habits is essential. The young casual labourer with these qualities often makes a good colonist, but the man of middle life who has hitherto been engaged in irregular employment seldom does. Again, the married man with the responsibilities of a family rarely makes good in his new employment, and usually drifts back to his old life. Regarding physical fitness, I am not in favour of insisting on too high a standard, provided there is reasonable hope of improvement. Some of our most successful colonists were not in very good physical condition when admitted, but yet responded well to the life. Some, we have to admit, have broken down. But when there are good qualities present, I am in favour of risking something to give such men a chance. The results on the whole have been encouraging. A good proportion of those who have passed through our colony are now earning their living in such work as they were trained for, and with a more careful selection of candidates I am confident that training colonies will prove powerful factors in reducing the incidence of tuberculous disease.

THE STANNINGHALL COLONY.

By W. B. CHRISTOPHERSON,

M.R.C.S., L.R.C.P.,

Tuberculosis Officer to the County of Norfolk and Medical Superintendent of the Stanninghall Colony.

This new community centre for tuberculous subjects is situated about six miles from Norwich on high ground near the village of Crostwick. The buildings and land, amounting to some 700 acres, together with the farm stock, were purchased at the end of the war by the British Red Cross Society for the sum of £25,000, and the management of the colony was placed in the hands of a Joint Committee. This Committee is made up of members representing the three following constituent authorities: Norfolk County Council, Norwich City Council, and Great Yarmouth Borough Council. The colonists are mostly ex-service men, civilians being admitted only when all applications from the former have been filled. The industries at present comprise: (1) Market gardening (10 acres under fruit and vegetable cultivation); (2) poultry farming; (3) carpentering; (4) pig farming; (5) bee-keeping; (6) boot repairing; (7) basket-making for the more active and advanced cases. A promising start has been made in the carpenter's shop in the production of such articles as garden furniture, tables, bedsteads, beehives, fowl-houses, etc., for sale, but up to the present time a large part of the work of the carpenters has necessarily been devoted to the building of recreation rooms, the carpenter's shop, pigsties, and chicken houses for the colony itself. The colonists have also built a hospital ward with annexes. Cottages have been built to accommodate the married men, with their wives and families, to which they are transferred from time to time. At present six only have been or are being completed, and the building of others is projected. In general, admission is restricted to ex-sanatorium cases such as are able to perform some kind of manual work. The staff consists of a Consultant Physician (Dr. F. W. Burton-Fanning), Medical Superintendent (Dr. W. B. Christopherson), Resident Manager (Mr. H. R. Orr), Matron (Miss Offord), and Sister (Miss Godwin).

NOTICES OF BOOKS.

THE CLINICAL STUDY OF TUBERCULOSIS

PROFESSOR SERGENT has written a book on "Clinical and Radiological Studies of the Respiratory System," which will be welcomed by physicians in this country, and more especially by those interested in the study of diseases of the chest.[1] The book comprises papers taken from his "Clinical Studies of Tuberculosis" and "Radiological Studies," but most of the material is published for the first time. The author presents conclusions drawn from observations made during a practice extending over ten years and on several thousands of cases supposed to be suffering from tuberculosis. The patients are taken from the war period and after. The volume also provides a study of the medical and medico-surgical aspects of chest wounds, and cases of gas-poisoning and their sequelæ which so often take on the mask of tuberculosis. The book is divided into two parts. The first part comprises clinical studies proper, and deals with the general symptomatology of the respiratory system, syphilis of the respiratory system, the sequelæ of chest wounds, gas-poisoning, etc. The second part is devoted to the consideration of radiological diagnosis, and can best be described in the words of the general title, "What the physician can and must ask from the radiological examination in the diagnosis of the respiratory system." The outstanding features of this important work lie in its comprehensive study of the differential diagnosis (clinical and radiological) of those diseases simulating pulmonary tuberculosis, and the analytical and critical exposition by a physician, and not by a radiological specialist, of the resources which radiology brings to clinical diagnosis. Those who listened to or have read the valuable paper of Dr. Rist, of the Laennec Hospital in Paris, delivered at the annual meeting of the British Medical Association in July last, will readily appreciate the contents of this book, which is distinctive of much of the work of the French school in recent years in regard to diseases of the respiratory system. This interesting and valuable work should be read by all engaged in the study of the diseases of the chest.

D. BARTY KING, M.D.

DUST PHTHISIS.

Dr. Frederick L. Hoffman's monograph on dust phthisis in the granite-stone industry is a valuable contribution to industrial hygiene and medicine, and will be of service to all students of health and life insurance.[2] An immense amount of statistical and industrial data is

[1] "Études Cliniques et Radiologiques sur les Maladies de l'Appareil Respiratoire," par Émile Sergent, Professeur de Clinique Médicale Propédentique, Médecin de la Charité, Membre de l'Académie de Médecine. Pp. 1-520, 47 figures dont 32 planches hors texte. Paris: A. Maloine et Fils, 1922. Price 25 fr.

[2] "The Problem of Dust Phthisis in the Granite-Stone Industry." By Frederick L. Hoffman, LL.D., being No. 293 of the Industrial Accidents and Hygiene Series of Bulletins of the United States Bureau of Labour Statistics. P. 178. Washington: U.S. Department of Labour, James J. Davis, Secretary. Bureau of Labour Statistics, Ethelbert Stewart, Commissioner. 1922. Price 20 cents.

presented, and the following are among the chief conclusions arrived at: (1) The granite-stone industry is carried on by wage-earners who, broadly speaking, live under sanitary conditions above the average, so that possibly unfavourable environmental factors are of decidedly secondary importance. (2) The housing conditions are also above the average. (3) Anthropometric records establish the fact of a superior physique, indicative of a higher degree of disease resistance, as determined by a relative weight above the average. (4) Granite workers, considered by specific occupations, show wide variations in tuberculosis frequency, the excess in the death-rate being most marked among the men employed in the use of pneumatic tools. Certain occupations, such as polishing, tool sharpening, bed setting, etc., do not show a marked excess, if any, in the mortality from pulmonary tuberculosis, clearly indicating that the risk is practically proportionate to dust exposure. (5) Compared with the normal death-rate of adult males of the State of Vermont, or of New England, the mortality from pulmonary tuberculosis among granite workers has increased enormously during the last two years, as contrasted with a diminishing mortality in the population at large. (6) The incidence of the disease is practically proportionate to the length of the trade life. Dr. Hoffman claims that his conclusions are in conformity with observations made in South Africa and Australia, and clearly indicate that the cause of the excessive liability to pulmonary tuberculosis is the inhalation of granite dust in a comminuted form of practically ultra-microscopical particles. He insists that the evidence is absolutely conclusive that the dust hazard depends primarily upon the silicotic content of the dust inhaled. The evidence is also conclusive that workers exposed to marble or limestone dust suffer a decidedly lesser liability to pulmonary tuberculosis than those exposed to granite or sandstone dust with a higher silicotic content. Dr. Hoffman indicates the need for further research, and especially from the medical point of view. He definitely states that "there are abundant reasons for believing that the disease certified as pulmonary tuberculosis among granite workers is often not a true form of tuberculosis, but, strictly speaking, a silicosis or pneumonokoniosis, or, in other words, dust phthisis of non-tuberculous origin, though possibly in the terminal stage complicated by a super-induced tuberculosis." The importance of a sound pathology in relation to prophylaxis is evident. Much help may be expected from radiological examinations. The Appendix contains a communication from Dr. Matthew Hay regarding health conditions in the stone industry of Aberdeen. The whole monograph deserves the fullest study by hygienists, industrialists, and all medical officers of health.

POPULAR INSTRUCTION REGARDING TUBERCULOSIS.

Co-operation between doctor and patient is essential if a successful combat is to be waged against tuberculosis. It is necessary therefore that both should understand the nature of the conflict and be trained in the use of weapons for offence and defence. A tuberculous patient requires to be instructed. It is to be regretted that so few medical advisers in sanatoria or in private practice undertake anything like an adequate education of their patients in anti-tuberculosis measures. Several excellent books suitable for ordinary men and women are now

available. Among such special reference may be made to Dr. C. E. Atkinson's "Lessons on Tuberculosis."[1] It provides reliable knowledge in a lucid, non-technical, serviceable form, with definite, specific, helpful answers to the many questions which arise in the mind of the average patient. The work deals mainly with pulmonary tuberculosis. It is just the volume which a doctor can place in the hands of an intelligent patient. Tuberculosis officers and others who are responsible for the instruction of cases under their care, and all who are planning popular lectures or are about to assist in anti-tuberculosis work, will find Dr. Atkinson's well-conceived and wisely executed book full of suggestions and practical instructions. There are a number of interesting illustrations.

MANUALS FOR MEDICAL ADVISERS AND WORKS OF REFERENCE.

Dr. A. S. Cushman has written a fascinating book on the marvels of chemistry in its relation to civilization—one which all students of evolution and human progress should make a point of reading.[2] It is a fine revelation of what chemistry has accomplished for mankind, and the author claims that "there can be no doubt that the destiny of the human race is deeply involved with the history and future developments of chemistry." There are interesting portraits of Cavendish, Boyle, Priestley, Thompson, Faraday, and Pasteur. The work is a highly original one, and will be of interest to all thoughtful men and women, and particularly to those who study medico-sociological problems bearing on human affairs.

A new edition of the handbook on the Chemical Examination of Water, Sewage, Foods, etc., written by Messrs. J. E. Purvis and T. R. Hodgson, has recently been issued, and will be welcomed by students preparing for diplomas and degrees in public health.[3] The volume is a member of the "Cambridge Public Health Series," edited by Dr. G. S. Graham-Smith and Mr. J. E. Purvis. The work will be of special service to those studying the chemistry of water, sewage effluents, foods, beverages, disinfectants, preservatives, etc. It will be helpful to medical officers of health, public analysts, and all interested in public health matters, and particularly in methods of analysis. We commend

[1] "Lessons on Tuberculosis and Consumption for the Household, showing How to Prevent Tuberculosis, How to Recognize its First Symptoms, How to Win Back Health." By Charles E. Atkinson, M.D., recently Medical Director of the Seymour Sanatorium for Diseases of the Throat and Lungs, Banning, California, etc. Pp. 740. New York: Funk and Wagnalls Company, 354-360, Fourth Avenue. London: 133-134, Salisbury Square, E.C. 4. 1922. $2.50.

[2] "Chemistry and Civilization." By Allerton S. Cushman, A.M., Ph.D., Director, Institute of Industrial Research, Inc., Washington. Lectures delivered under the Richard B. Westbrook Free Lectureship Foundations at the Wagner Free Institute of Science, Philadelphia. Pp. 151. With portrait illustrations. Boston, Mass., U.S.A.: Richard G. Badger, the Gorham Press, 194, Boylston Street. 1920. Price $2.50 net.

[3] "The Chemical Examination of Water, Sewage, Foods, and other Substances." By J. E. Purvis, M.A., University Lecturer in Chemistry and Physics as applied to Hygiene and Public Health, St. John's and Corpus Christi Colleges, Cambridge; and T. R. Hodgson, M.A., Public Analyst for the County Boroughs of Blackpool and Wallasey and the Municipal Boroughs of Bacup and Stalybridge. Second and enlarged edition. Pp. vi+346. Cambridge: The University Press. 1922. Price 20s. net.

the book to the notice of medical superintendents of hospitals and sanatoria. This concise, comprehensive, and thoroughly practical manual is one of the best of its kind. It also contains an excellent bibliography and various serviceable tables.

All students of the tuberculosis problem, and all workers in the movement making for sunlight and the abatement of the smoke nuisance, should read the remarkable volume on "The Smokeless City," written by the former Lord Mayor of Manchester and Miss Marion Fitzgerald.[1] It is an intensely interesting presentation of the evils, damage, and loss wrought by smoke in our industrial centres, and provides information regarding the various systems which, while making for increased comfort and effectiveness, will go far to arrest the heavy disabilities arising from smoke-producing methods. All medical officers of health and workers engaged in anti-tuberculosis service should make a point of studying this really helpful and constructive manual.

Dr. Sutherland's pocket guide to dispensing has been a means of saving time, trouble, and money for many a hard-pressed medical practitioner. It is now issued in a fifth and thoroughly revised edition [2] The work is thoroughly practical, and will be of real service to medical superintendents of small hospitals and sanatoria who have to be responsible for the care or dispensing of medicaments. The manual opens with a collection of Practical Hints, and these are followed by an excellent collection of Formulæ. A special section is devoted to "Formulæ for Workhouse and Parish Practice." The Appendix contains various tables likely to be helpful in dispensary service.

Messrs. Oppenheimer, Son and Co , Ltd., have issued Liber III. of their "Scintillulæ Sapientiæ," which is a cleverly constructed collection of quotations ingeniously designed to serve an advertising aim.[3] The same firm have also published, under the designation of "Ephemeris Pharmacologica," a synopsis of recent literature on the nature and use of certain drugs and pharmaceutical preparations, with a visiting list for 1922.

[1] "The Smokeless City," by E. D. Simon, M.I.C.E., M.I.M.E., ex-Lord Mayor of Manchester, and Member of the Departmental Committee on Smoke Abatement, and Marion Fitzgerald, Assoc. Roy. San. Inst., formerly Inspector and Health Visitor to the Woolwich Borough Council. With a Preface by Lord Newton, Chairman of the Departmental Committee on Smoke Abatement. Pp. xi+82. With frontispiece and figures. London: Longmans, Green and Co. 1922. Price 1s. 6d. net.

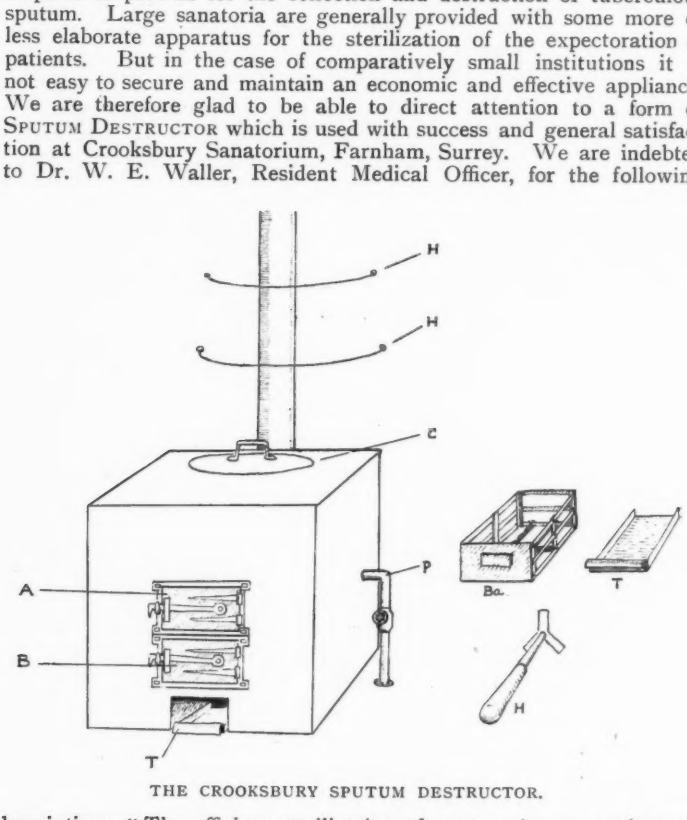
[2] "Dispensing Made Easy. With Numerous Formulæ and Practical Hints to Secure Simplicity, Rapidity, and Economy." By Wm. G. Sutherland, M.B. (Aberdeen). Fifth Edition. Revised by A. L. Taylor, Ph.C., M.P.S., Pharmacist, Bristol Royal Infirmary. Pp. viii+98, with blank leaves for private formulæ. Bristol: John Wright and Sons, Ltd. 1922. Price 6s. net, or interleaved 7s. 6d. net.

[3] A copy of "Scintillulæ Sapientiæ" can be obtained on application to Messrs. Oppenheimer, Son and Co., Ltd., 179, Queen Victoria Street, E.C. 4.

PREPARATIONS AND APPLIANCES.

THE DISPOSAL OF TUBERCULOUS SPUTUM.

In the prevention and arrest of tuberculosis one of the most essential steps is to provide for the collection and destruction of tuberculous sputum. Large sanatoria are generally provided with some more or less elaborate apparatus for the sterilization of the expectoration of patients. But in the case of comparatively small institutions it is not easy to secure and maintain an economic and effective appliance. We are therefore glad to be able to direct attention to a form of Sputum Destructor which is used with success and general satisfaction at Crooksbury Sanatorium, Farnham, Surrey. We are indebted to Dr. W. E. Waller, Resident Medical Officer, for the following



THE CROOKSBURY SPUTUM DESTRUCTOR.

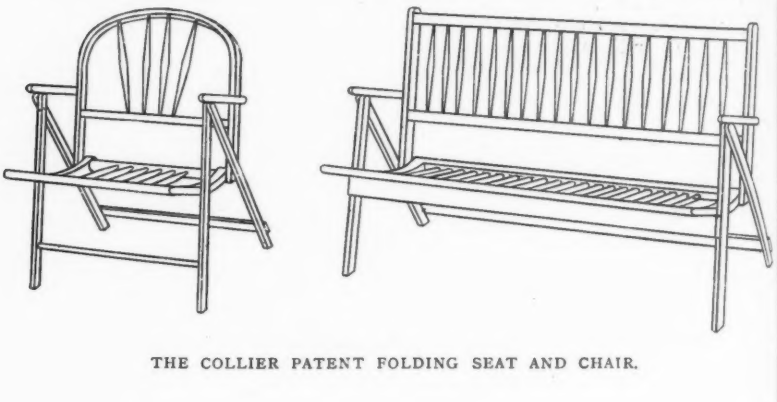
description: "The efficient sterilization of sputum is a procedure of no great difficulty in principle, but sometimes proves more difficult in practice, especially in small institutions, where expense is a consideration. The destructor should possess two main qualities: (*a*) It should be distinctive, and should be used for no purpose which does not concern the disposal of sputum. It may, however, be used for the destruction of soiled dressings. (*b*) It should be so fitted as to sterilize effectively all apparatus which may be used in connection with sputum—*e.g.*,

handkerchiefs, flasks, etc., these, of course, varying with the institution. With the exception of stoking and cleaning, the destructor should be in the direct charge of a nurse, or trusted servant of the institution. The duty of sterilizing the sputum should never be left to the ingenuity of an 'outside man.' A destructor possessing the qualities mentioned above has recently been installed at the Crooksbury Sanatorium, and has given good results in practice. At Crooksbury Sanatorium, in addition to the actual destruction of the sputum, the following articles have to be dealt with: (1) Sputum cups, the sputum itself being received in linings of grease-proof paper; (2) paper handkerchiefs; (3) sputum flasks; (4) washable pocket linings; (5) soiled dressings. The destructor (the essential features of which are indicated in the accompanying figure) consists of a cubical brick furnace, the sides measuring 3 feet, with an iron cauldron, *C* in diagram, built into the top. The cauldron is placed towards the back, so that it intervenes between the fire space in front and the bottom of the flue behind. The grate surface is 8 inches wide and 20 inches from front to back, thereby giving a fire area of rather more than a square foot. The fire space itself is 12 inches high, and consists of an upper and lower half, each having its own door—viz., *A* and *B*. The fire is made up through the lower door, *B*, and can subsequently be stoked through *A*. The lower sides of the upper half of the fire space, to which *A* gives access, are fitted with smooth projecting ledges, on which is made to slide an iron basket, *Ba*, specially designed to carry the sputum. This basket, which is made to fit into the upper half of the fire space, directly over the fire itself, is 19½ inches long, 7 inches wide, and 5 inches deep, and is strongly constructed of flat iron bars riveted on to angle plates, the front being solid and provided with a socket into which a suitable handle, *H*, can be fitted for the purpose of manipulation. The cauldron is of cast iron, is cup-shaped, and has a capacity of six gallons. A pipe, *P*, is led from the bottom, through the brickwork of the furnace, and thence, downward, to a drain, this pipe being provided with a valve by which the cauldron can be emptied. The pipe is fixed into the bottom of the cauldron in such a way that the interior of the latter is perfectly smooth and without any projections, so that thorough scouring is easy. The cauldron is fitted with an inner perforated tray, which can be lifted out by handles, and also with a simple lid. No tap is provided for filling the cauldron direct, but a length of indiarubber tubing, which can be fitted on to the tap of a neighbouring sink, serves this purpose. When the cauldron is filled to three-quarters of its capacity, the water usually starts to boil about twenty minutes after the fire is lit. The procedure employed in securing the destruction of sputum is as follows: The basket, *Ba*, which is removed from the fire space before the fire is made up, is placed on the flat top of the destructor, and lined with paper, pine-needles, or other combustible material, on which can be placed the sputum-cup linings, which have been removed from the cups by means of forceps. When the fire surface is satisfactory, the basket is slid into position, the handle taken off, and the door *A* closed. The fire is made up with wood and coke, and should be uniformly red and glowing, rather than blazing fiercely, since, in the former case, the contents of the tray become to some extent dried before actual ignition takes place and there is less tendency for fluid sputum to trickle through the fire

and grate. It is unnecessary to bank the fire as high as the ledges. As a rule, all the sputum from fifty-one patients can be disposed of at a single filling. The basket can also be used for the destruction of paper handkerchiefs and soiled dressings. In order to provide for the destruction of any sputum which may pass the grate—not a common occurrence—an iron tray, *T*, is placed on the floor of the air space under the grate to receive it. The tray usually becomes so hot in this position that the sputum boils on impinging upon it. The tray has a flanged edge in front, by means of which it can be lifted up with the handle *H*, placed over the fire through *A*, after the basket has been removed, and heated to dull redness. The contents of the basket are usually reduced to a little friable ash in about a quarter of an hour. As to the sterilization of cups and flasks, at Crooksbury enamelled iron mugs of 9 ounces capacity are used as sputum cups. When the linings are removed the cups are simply dropped into the tray of the cauldron and boiled for ten minutes. The contents of the flasks are emptied into convenient cup linings; the flasks are then filled with water, placed in the water when still cold, and brought to the boil. The washable pocket linings are made locally at the sanatorium, and are composed of drill, with a purse-string run through the upper edge. They are boiled in the cauldron, rinsed in clean water, and dried by hanging on semicircular wire hoops, which are fixed so that they receive the heat from the uptake of the flue (see *H H* in diagram). The total cost of the destructor, including structural alterations to an existing shed, was somewhat less than £20. The average expenditure of coke for the various purposes is about 8 pounds daily. The average time expended by the nurse in carrying out the duties enumerated above is from half to three-quarters of an hour daily. It is with pleasure that I acknowledge my indebtedness to Dr. F. R. Walters, the Medical Director, for his permission to publish this account."

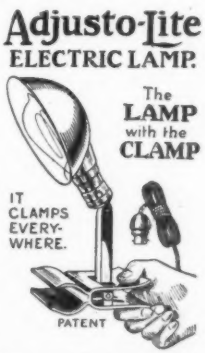
APPLIANCES FOR THE DOCTOR AND THE PATIENT.

Two of the most important agents in furthering the welfare of tuberculous patients are exercise and rest. Provision for the latter is of the utmost importance. It is generally recognized in hospitals and



THE COLLIER PATENT FOLDING SEAT AND CHAIR.

sanatoria that the beds must be comfortable and hygienic, but oftentimes inadequate attention is given to the provision of well-designed, strong, easeful chairs and satisfying seats. In all institutions dealing with consumptive and other tuberculous subjects and in all open-air schools for children it is of the utmost importance that properly constructed and thoroughly hygienic seats should always be available. Mr. A. Collier of High Wycombe has devoted much time and skill to the designing and manufacture of various forms of high-class furniture, and has made a speciality of chairs and seats.[1] We would direct attention to his admirable PATENT FOLDING ARM-CHAIRS and FOLDING GARDEN SEATS. The chief features of these are shown in the illustrations on p. 48. Mr. Collier has also designed an excellent form of reclining DECK CHAIR which folds and unfolds with one movement, and is adjustable and yet non-collapsible when in use. This variety will be of service in sanatoria. These chairs and seats only require to be known to be thoroughly appreciated.



The accompanying illustration of the ADJUSTO-LITE ELECTRIC LAMP will at once indicate that this is a novelty likely to be appreciated both by doctors and patients.[2] Although designed to serve wherever light is required in a concentrated and convenient form, it will undoubtedly be of exceptional value in the consulting-room, as well as in hospital wards, sanatorium shelters, nursing homes, and rooms of sick folk. The lamp, which is made of solid brass and handsomely finished in brass, nickel, or bronze, can at once be attached anywhere, and the reflector can be turned into any required position. By a mere touch of the hand the felt-lined clamp can be adjusted. Wherever electric power is available this useful equipment will be welcomed.

THE LYTUP BAG.

THE LYTUP BAG is an ingeniously constructed, artistic, and thoroughly practical novelty which will be approved by all women.[3] We specially commend it here because it will prove of exceptional service to those patients who, in hospitals or sanatoria in this country

[1] Full particulars regarding the Collier Seats and Chairs can be obtained on application to Mr. A. Collier, Chair Manufacturer, Moor Common, Lane End, High Wycombe, Bucks. The prices are as follows: Patent Folding Armchair, folding capacity, 28 × 21½ × 2½ inches; the same cut lower for ladies, 24 × 21½ × 2½; price 14s., carriage free. Patent Folding Garden Seat, 4½ feet long, folding capacity, 4½ × 30 × 3, price 30s., carriage paid. Folding Deck Chair, 15s. Extras: Footrest, 4s. 6d.; canopy, 6s. 6d.

[2] The Adjusto-Lite Electric Lamp is supplied by S. Guiterman and Co., Ltd., 35 and 36, Aldermanbury, E.C. 2. Price in satin brass, 21s.; nickle or bronze, 23s. complete, with 8 feet of covered flexible cord.

[3] Particulars regarding the Lytup Bag can be obtained from the designer and manufacturer, Mr. Alfred Dunhill, 137-143, High Street, Notting Hill Gate, W. 11. The price of the bag varies from £3 3s. to £5 5s., according to size, shape, materials, etc.

or in Switzerland or elsewhere, in the gardens or on the balconies of their own homes, have to undergo open-air and sanatorium treatment or carry on a rest-cure out-of-doors. Moreover, for bed-fast cases, and indeed for all restless and sleepless invalids in nursing homes or undergoing treatment in their own dwelling-places, the "Lytup Bag" will bring encouragement, comfort, and support. It may also be added here that it has been designated the "Vanity Bag," and there is no doubt that any girl or woman would count herself fortunate to be the possessor of one of these dainty, beautiful, and yet highly useful personal companions. The essential feature of this sensible novelty can be readily explained. The bag is fitted with an electric lamp and a dry battery hidden in the lining; the former illuminates a little mirror when on opening the bag the lamp automatically lights up, revealing all the essential contents so necessary and helpful to a sensitive and self-centred patient. The bag can be obtained in various convenient sizes and shapes, and composed of different artistic coloured materials. This is indeed an ideal New Year's gift.

THE DEKLALITE.

In hospital and sanatorium life as well as in connection with home treatment there are frequent occasions at night-time when a reliable lamp is urgently required. An excellent and novel form of electric lamp, which will be appreciated both by doctor and patient, has been introduced under the name of THE DEKLALITE.[1] It is a compact, convenient pocket lamp, requiring no battery and calling for no refills. It is a self-generator, containing its own little dynamo. This is set in action by hand pressure on a lever, which lies along one side of the lamp, and is at once released by pressure on a milled nut. The chief features of this admirable electric lamp are shown in the accompanying figure. "The Deklalite" is handy to carry, durable, and is always ready. It is an indispensable companion for doctors, nurses, and patients.

THE ELECTRIC WALKING-STICK.

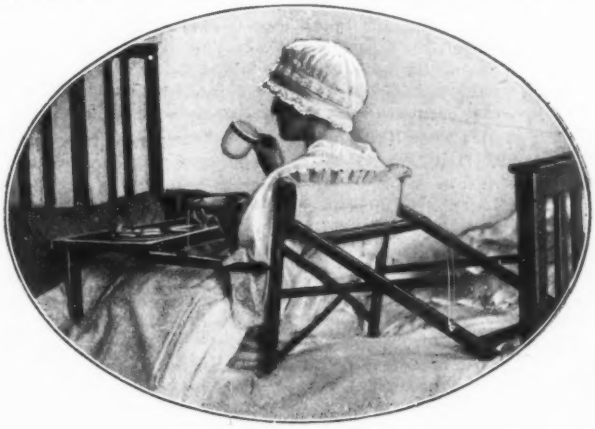
The new ELECTRIC WALKING-STICK will be a boon for doctors and patients.[2] It is just the utilitarian novelty which many consumptives, tuberculous cripples, and others, will know how to appreciate. Certainly for medical superintendents of sanatoria and the like, as well as for medical practitioners in country districts, and all others who have to take their walks abroad at night, this simple, cleverly constructed, but most effective invention will be exceptionally acceptable. At the head of a handsome, strong, trustworthy stick is a small dry battery with a sunk electric lamp.

[1] The Deklalite is supplied by Dekla Limited, Beacon Works, Bradford Street, Birmingham. Price 21s. each.

[2] The Electric Walking-Stick is supplied by K. W. Gibson, 11, Duke Street, Adelphi, Charing Cross, W.C. 2. Price 10s.

A turn of the upper end of the stick and a bright beam of light illumines the way. Here is a friend in need which will help to keep one from stumbling, and will be sure to be of assistance in countless ways.

The RECLINOR, a figure of which in actual use is annexed, is a new and excellent form of folding bed-rest.[1] It is an appliance which may well be counted as part of the equipment of every well-appointed house. Invalids and all classes of patients only need to know the Reclinor to appreciate its merits. With this simple apparatus troublesome "propping-up" with pillows and the like can be dispensed with. For



THE RECLINOR.

all lung and heart cases the Reclinor will be of exceptional service. It should be available in all hospitals, sanatoria, nursing homes, institutions for sick children, and wherever bed-fast persons are to be found. The Reclinor is made of dark polished oak, with shaped back, and can be readily adjusted. It is strong, well-finished, folds flat when not in use, and with a table attachment, which can be supplied if desired, there are provided means for the carrying out of comfortable reading, writing, light work, and the conduct of various forms of recreation.

Messrs. Beard-Brown and Company, the well-known firm of boot and shoe manufacturers, have introduced, under the designation of the "SPICK FOLDING SLIPPERS,"[2] a convenient, portable, strong, warm, and pleasing form of covering and protection for the feet, and such as patients in their own rooms or undergoing treatment in hospitals or sanatoria or elsewhere will find most comfortable and useful. They are available in sizes suitable for both men and women, and can be had in brown, grey, rose, or blue colours. The ladies' slippers are fitted with fur. Although primarily intended for use as bedroom slippers, or when travelling, there is no doubt they are so attractive, easeful, and gener-

[1] The Reclinor is supplied by the "Le-da" Press Company, 310, 312, 314, Clapham Road, S.W. 9. Price of bed-rest alone, 13s. 6d.; or with table combination, 21s. the set.

[2] The "Spick" Folding Slippers are manufactured by Beard-Brown and Company, St. Andrew's Road, Northampton. Prices, per pair, 4s. 6d., or with bag 5s.

ally effective, that they will find favour on other occasions, and, as we have indicated, for the sick and delicate, and especially those who have to rest much under sanatorium conditions, they will prove most acceptable.

At this time of the year a reliable rubber hot-water bottle is indispensable for all patients, delicate persons, debilitated children, and old folk, and even for the vigorous and healthy. They may be approved as a winter-time bed comforter or motor companion, conserving energy and adding to the conveniences of life. For tuberculous and other patients undergoing sanatorium treatment a good hot-water bottle is an absolute necessity. One of the best and most desirable forms is supplied by the North British Rubber Company.[1] It possesses a patent stopper which enables the air to escape easily when the bottle is being filled, and so obviates the risk of getting the hands scalded. The bottles are made from specially spun tough-fibred cotton and the finest grade of rubber, and in all respects the design and workmanship are of the best.

Dr. Marcus Paterson, Medical Superintendent of the Colindale (M.A.B.) Hospital at Hendon for advanced cases of pulmonary tuberculosis, has advocated the employment of a sleeping mat made of Japanese grass or Panama straw as a means for the prevention of "night sweats." In a recent paper on the subject Dr. Paterson arrives at the following conclusions:[2] (1) Night sweats should be called slumber sweats, as they do not occur except when a person sleeps. (2) In early stages of pulmonary tuberculosis, and in the absence of any other infection, they are often the one indication of *active* tuberculosis. (3) Slumber sweats cease some weeks before death, because the patient's resistance has been overcome. (4) Slumber sweats can in nearly all cases be prevented without drugs by sleeping on a grass mat over the mattress. (5) Sleeping without a mattress on canvas will stop sweats. (6) The sweats are due to the presence of bacterial products (toxins) in the blood (in large quantities); they can therefore occur in any bacterial disease, and are not in consequence in any way diagnostic of pulmonary tuberculosis. Messrs. Mayer and Phelps are now providing the SLUMBER MATS as approved by Dr. Paterson.[3] They deserve to be thoroughly tested. The mat is placed under the sheet and over a smooth, comfortable mattress, and there must be no overclothing or burdening with heavy bed-coverings.

The "KNOCK-KNOBBY" is a novelty which smokers and those who have to associate with the users of pipes will appreciate.[4] It is an artistically shaped oak bowl with an elevated centre covered with cork, on which the bowl of a pipe may be safely knocked, and so emptied of ash.

[1] The North British Hot-water Bottles are supplied in sizes varying from 6 × 10 to 10 × 14 inches, and prices range from 3s. to 6s. Full particulars may be obtained on application to the North British Rubber Company, Ltd., Castle Mills, Edinburgh, or North British House, 204, Tottenham Court Road, W. 1.

[2] Paterson, Marcus: "Night Sweats: their Significance and Prevention," the *Lancet*, 1922, vol ii., p. 225.

[3] Full particulars regarding the Marcus Paterson Slumber Mats can be obtained from Mayer and Phelps, Chiron House, 59-61, New Cavendish Street, W. 1.

[4] The "Knock-Knobby" smokers' bowl is made by the "Knock-Knobby" Ash Bowl Co., 34, Chesterton Road, Cambridge, from whom particulars may be obtained.

DIETETIC, HYGIENIC, AND THERAPEUTIC SPECIALITIES.

The house of Angus Watson and Co., Ltd., of Newcastle-upon-Tyne, have won a world-wide reputation for the reliability and excellence of their Preserved Foods.[1] Many of these are specially suited for consumptive patients and tuberculous and tuberculously disposed children, as well as exceptionally useful in improving the nutrition of delicate, debilitated, and convalescent subjects. They are admirable for use in hospitals, sanatoria, open-air schools, as well as for patients undergoing domiciliary treatment. The series of "Sailor Soups" (including thick ox-tail, kidney, green-pea, and tomato), in sealed tins, provide trustworthy, convenient, time and labour saving means for the provision of appetizing and nourishing dishes which will win the approval of patients of all ages. We would also commend the company's series of "Sailor Savouries," which are prepared under strict hygienic supervision and a scientifically directed selection of materials. Not only for the sick and malnourished, but for use by doctors, students, nurses, and other healthy, hard-worked people, the Angus Watson specialities may be thoroughly recommended. Under the title of "The Story of Preserved Foods," Messrs. Angus Watson and Co. have issued a handsome volume, which provides detailed practical information regarding the various dietetic products supplied by this far-famed firm, and also affords valuable data as to the preparation of canned foods and other preserved nutrients, such as will be of interest and assistance to medical advisers and other students of food questions.[2] There is also an excellent section on Evaporated and Dried Fruits. Medical officers of health will appreciate the practical notes and the useful bibliography.

SANI-FLUSH is a new sanitary preparation, which in the ordinary domestic habitation and in all public institutions and municipal conveniences promises to be of service in maintaining good hygienic conditions.[3] It is a powerful composition for the cleansing of w.c. bowls, acting, not as a soap or scouring powder, but as a chemical agent, which on contact with water forms a solvent of stains and sediments without producing any damage to the bowl or its connections.

HARPIC is another sanitary preparation,[4] which is an effective agent in securing a hygienic condition of the lavatory and w.c. This powder certainly cleanses, and would appear also, at least in some measure, to disinfect the w.c. porcelain receiver and trap without impairing the enamel surface or proving in any way destructive to the pipes. We have used it with very satisfactory results.

PELDO is a new form of skin cream for the protection and cleansing of the hands.[5] For patients undergoing open-air treatment, and especially for those engaging in any form of manual work entailing exposure to weather and dirt, this preparation will be a great comfort.

[1] Particulars regarding the food specialities supplied by Angus Watson and Co., Ltd., Newcastle-upon-Tyne, will be sent to anyone interested in dietetics on application.

[2] "The Story of Preserved Foods," compiled by the executive of Angus Watson and Co., Ltd. Edited by Ernest H. Taylor. Second edition. Pp. 164. Newcastle-upon-Tyne: Angus Watson and Co., Ltd. 1922.

[3] Sani-Flush is supplied by the British Harold F Ritchie and Co., Ltd., 33, Farringdon Road, E.C. 1, in cans containing 22 ounces, at 1s. 9d. each.

[4] Harpic is provided in convenient tins at 6½d. and 1s. 5d. each by the Harpic Manufacturing Company, 1, Avenue Road, Camberwell, S.E. 5.

[5] Peldo is supplied by Harker, Stagg, and Morgan, Ltd., Peldo Works, Devon Wharf, Mile End, E. Price, in collapsible tube, 1s. 6d. each.

Under the designation of the "DACCOL" VACCINES there have been introduced a series of non-toxic neo-vaccines, as well as ordinary vaccines, which promise to be of service in sanatorium and dispensary work, and also in hospitals and for general practice.[1] The neo-vaccine is an elaboration of the sensitized type, containing all active principles unimpaired and capable of being administered in large doses without producing undesirable reactions. The "Daccol" vaccines are put up in special bottles fitted with a particular form of safety cap. No less than sixteen varieties of the non-toxic "Daccol" neo-vaccines are now available as "stock preparations," and all appear to be possessed of marked antigenic powers. The various vaccines are put up in special bottles, each fitted with a "Daccol" safety cap.

IDOZAN is an iron preparation which will be useful for administration to consumptive and other tuberculous patients who need iron, but cannot tolerate ordinary ferruginous preparations.[2] It is said to contain 5 per cent. of assimilable iron, and gives rise to no gastric disturbance and does not lead to constipation. It is neutral, palatable, does not tarnish the teeth, and can be taken in water, milk, or tea, and in large doses.

Messrs. J. F. Macfarlan and Co. have introduced, under the name of OPOIDINE, a preparation which is said to consist of the total alkaloids of opium in soluble form.[3] One part of Opoidine is stated to be equal to five parts of opium. It is readily soluble in water, and can be administered by the mouth or rectum or given hypodermically. The claim is made that Opoidine produces the full pharmacological action of opium, and contains the mixed active principles in uniform ratio. Opoidine is now available in powder, tablets, hypodermic tablets, and ampoules. This sedative and hypnotic promises to be of special service in the treatment of certain cases of tuberculosis, and merits thorough trial. The same firm have favoured us with specimens of their chloroform and ether for anæsthetic purposes, which appear to be efficient, reliable, and inexpensive.

The "ALLENBURY'S" PASTILLES have long been popular as desirable preparations for use in the treatment of disorders of the mouth and throat and for alleviating troublesome cough.[4]

The Anglo-American Oil Company, Ltd., well known for the excellence of their liquid paraffin preparation "Nujol," have now introduced, under the name of MISTOL, a useful nose and throat spray preparation containing eucalyptus, camphor, and menthol in suitable proportions with liquid paraffin.[5] Mistol can be used with any properly constructed atomizer, and forms a serviceable application, not only for the treatment of local inflammatory and other irritable lesions of the respiratory passages, but as a prophylactic and cleansing agent.

[1] The "Daccol" Vaccines and Neo-Vaccines are supplied by the Drug and Chemical Corporation, Ltd., 41, Lower Kennington Lane, S.E. 11, who issue a useful booklet which will be supplied to medical advisers on application.

[2] Idozan is supplied by Chas. Zimmermann and Co. (Chemicals), Ltd., 9 and 10, St. Mary-at-Hill, E.C. 3.

[3] Particulars and specimens of Opoidine and anæsthetic preparations can be obtained by medical practitioners on application to J. F. Macfarlan and Co., 9 and 11, Moor Lane, E.C. 2.

[4] Messrs. Allen and Hanburys, Ltd., 37, Lombard Street, E.C. 3, have recently issued a revised list of their pastilles, suggestively grouped as regards their therapeutic value, and indicating also their pharmaceutical composition.

[5] Particulars regarding Mistol can be obtained from the Anglo-American Oil Company, Ltd., Albert Street, Camden Town, N.W. 1.

THE OUTLOOK.

"BRITISH JOURNAL OF TUBERCULOSIS," VOL. XVII., 1923.

The British Journal of Tuberculosis is now entering on its seventeenth year. The first sentence in its first number, issued in 1907, declared that "the tuberculosis problem is essentially a medico-sociological one," and later in the same Editorial the following appeared: "Tuberculosis is a malady which not only demands the study of the pathologist and the sanitarian, and the care of the physician and surgeon, but calls for the serious attention of every worker in life's strenuous workshop." The aim and policy indicated in our first issue has been adhered to through all the years. We have sought to provide a representative, independent, scientific, practical quarterly which would be acceptable and helpful to all students and workers interested in the medico-sociological aspects of the tuberculosis problem. War and after-war conditions have done much to arrest the tuberculosis movement. Leaders and workers and supporters are discouraged, and much service has been withdrawn. State action has gone far to eliminate voluntary efforts. Even among many tuberculosis officers and superintendents of sanatoria there is but little enthusiasm. Patients generally are disheartened. Schemes for the advancement of research and measures for the betterment of sufferers are held up for want of financial means. Meanwhile, tuberculosis is producing immense wastage of life and exhausting national resources. The time seems to have arrived when a thoroughly authoritative inquiry should be held, in which all interests dealing in any way with the problem should be adequately represented.

In order to obtain serviceable guidance in regard to the future of the sanatorium movement, we have secured a number of expressions of opinion from well-known leaders and experienced workers. These are presented in the Symposium which has first place in this the first number of a new volume. With a view to making this journal even more serviceable to those who are engaged in the tuberculosis campaign we have sought the advice of a number of our readers regarding ways and means whereby this journal might increase its usefulness as a practical organ. Although the majority of our correspondents appear to approve the journal in its present form, we have also received some helpful suggestions which we trust may enable us to advance our publication as a scientific, practical, and up-to-date journal of tuberculosis. While taking this opportunity of expressing warm appreciation of the services rendered by contributors and readers in enabling this journal to survive all the difficulties of the past eight years, we still confidently rely on the continued sympathy and support of our many subscribers, both at home and abroad, and we welcome all suggestions which may enable it to accomplish more for the cause it seeks to serve.

THE GOAT AND TUBERCULOSIS.

The Ministry of Agriculture and Fisheries have issued important official communications on "The Goat as a Source of Milk" and "Hints on Goat-Keeping" (Leaflets Nos. 306 and 383). We have also recently received the following extract from a communication to the Goat Congress held at Roermond, Holland, August 16 to 17, 1921, by Mr. J. Timmermans, Chairman of the Dutch Goat-Breeding Committee and Government Breeding Adviser at Roermond. The table indicates the number of goats slaughtered at various slaughter-houses in Holland and the percentage found to be tuberculous during the years 1911–20:

Slaughter-house at—	Total Animals Slaughtered.	Total found with Tuberculosis.	Percentage.
Groningen	793	1	0·126
Alkinaar	1,297	1	0·077
Haarlem	252	0	—
Leiden	1,372	10	0·728
Dordrecht	3,106	7	0·225
Rotterdam	39,209	10	0·025
Utrecht	1,623	6	0·369
s'Hertogenbosch ...	2,467	10	0·405
Nymegen	2,275	1	0·043
Venlo	996	1	0·1
Amsterdam	5,798	7	0·12
Total	59,188	54	0·091

A communication which appeared in the *Dairyman* for November, 1921, and was apparently taken from the *Veterinary News*, contained the following: "Goat-keepers, as much as medical authorities, in the United Kingdom are obsessed with the idea that the goat is immune to tuberculosis; but this is quite erroneous, as no animal is more susceptible than the goat when kept under conditions favourable to its contraction and spread. It is quite true, however, that very few cases of its occurrence under ordinary conditions have been recorded in England, the United States, Holland, and certain other European countries. On the other hand, its frequency has been reported in France, where goats in contact with tubercular cattle have been proved to be very susceptible to the disease. Certain Dutch authorities at the recent Congress for the Improvement of the Goat expressed the opinion that once the disease got into a herd of goats it would spread just as rapidly as it would in herds of cattle. According to Mr. Jacq. Timmermans, who has paid much attention to the welfare of the goat in Holland, the percentage of tuberculosis in 49,030 of goats sent to the abattoirs in Holland was 0·153. On the other hand, Murray, MacNutt, and Purwin have stated that in 77,270 sent to the slaughter-

houses in the United States of America not one case of tuberculosis was observed. These authors, however, admit that undoubted cases of the disease have been observed, notably in Iowa. As to its incidence in England there is, beyond a few recorded cases, no evidence, since the goat being little used for food rarely finds its way to the abattoir, where observations could be made as to its prevalence." We have sought the assistance of the Ministry of Agriculture and Fisheries, 4, Whitehall Place, S.W. 1, in regard to this important question of tuberculosis in goats, and have received the reply that "the Ministry is unable to refer you to any official or other statistics as to the prevalence of tuberculosis among goats in this country, but it is believed that cases of this disease in goats are rare." The British Goat Society has issued an interesting illustrated Year-Book which will appeal to all goat-lovers.[1] It contains much practical information and many striking photographs. Among the signed articles is one by Mr. F. H. Stainton, F.R.C.V.S., on "Tuberculosis." He arrives at the following conclusions: "Tuberculosis is a very real thing, so far as the goat is concerned. Susceptibility is about the same as in other animals—neither more nor less. But actual experience goes to show that the incidence of the disease in this country is rare." It is also stated that "goat milk cannot be taken invariably as tubercle free." It has been proposed that sanatoria in this country should be encouraged to keep goats and use goats' milk for their patients. Some medical advisers have strongly recommended the use of goats' milk for children. Evidently there is room for scientific investigation into this matter, and we shall be glad to receive any reliable information which may be forthcoming.

NOTES AND RECORDS.

Sir William Purdie Treloar, the founder of the great Hospital for Tuberculous Crippled Children at Alton and Hayling Island, which Sir Henry Gauvain directs with such conspicuous success, on January 13 celebrates his eightieth birthday. All friends of children and workers for the prevention and arrest of tuberculosis in childhood will desire to join in the congratulations which are being sent to this great benefactor. A tribute is being raised in the form of an endowment fund for his famous institution. Mr. C. E. Lawrence has prepared a booklet giving an account of the man and the work he has founded.[2]

The London County Council has issued a 7-page circular giving particulars of its revised scheme for the treatment of tuberculosis in London.[3] The main purposes are defined as: "(1) To stimulate and co-ordinate all the forces, public and voluntary, available for combating tuberculosis, and to provide, directly or indirectly, such facilities for treatment as may be necessary; (2) to encourage every variety of effort directed towards the prevention of tuberculosis; and (3) to encourage

[1] "The British Goat Society's Year-Book for 1922." Edited by the Hon. Secretary, Thomas W. Palmer, from the Society's offices, 5, Fenchurch Street, E.C. 3. Price 1s. 6d. net.

[2] A copy of "William Purdie Treloar: An Eightieth Birthday Tribute," by C. E. Lawrence (price 1s. net.), can be obtained on application to Mr. Percy Armytage, C.V.O., 33-34, Mansion House Chambers, E.C. 4.

[3] A copy of the circular (No. 2,183) can be obtained from P. S. King and Son, Ltd., 2 and 4, Great Smith Street, Victoria Street, Westminster, S.W. 1. Price 4d.

all efforts for the care of tuberculous persons, with a view to securing that after receiving treatment their home conditions and occupations shall be such as to minimize the risk of relapse."

Dr. Redman's studies on the treatment of intestinal tuberculosis with naphthalene emulsion have been reprinted in brochure form.[1] The work was carried out in the Department of Bacteriology of the University of Liverpool.

The Commonwealth, the periodical issued by the Massachusetts Department of Public Health, devotes its issue for July-August, 1922 (Vol. IX., No. 4), to tuberculosis. It contains a number of signed articles by American experts, and there is a directory of officials, institutions, and organizations dealing with tuberculosis. Such a publication indicates something of the spirit and methods with which the tuberculosis problem is being attacked in America.

The Report of the Council of the National Association for the Prevention of Tuberculosis, 20, Hanover Square, W. 1, contains an account of the Burrow Hill Colony at Frimley, with records regarding the meetings of the International Conference in London, 1921, and Brussels, 1922. It is announced that the next N.A.P.T. Annual Conference will be held in Birmingham this summer. Regret is expressed at the resignation of Dr. J. J. Perkins, who, after seventeen years' service as Hon. Secretary, has resigned. An appendix contains the constitution and by-laws of the International Union against Tuberculosis.

The Queen Alexandra Sanatorium Fund assists tuberculosis patients of small means to obtain sanatorium treatment at Davos, in Switzerland. Early cases only can be received. Particulars may be obtained from the Secretary, Davos Platz, Switzerland, or from D. Vesey, Esq., 3, Camp View, Wimbledon Common, S.W. 19.

Dr. Rollier's paper on "The Share of the Sun in the Prevention and Treatment of Tuberculosis," read in the Tuberculosis Section of the recent Glasgow meeting of the British Medical Association, has been reprinted in brochure form.[2]

Dr. Rollier and his colleagues are giving a Mid-Winter Post-Graduate Course of Lectures and Clinical Demonstrations on Heliotherapy at Leysin, January 16 to 21. A programme and particulars can be obtained on application to Secrétariat Médical du Dr. Rollier, "Les Frênes," Leysin, Switzerland.

Dr. Calot, 69, Quai d'Orsay, Paris, is giving a course of instruction in orthopædics, including the treatment of various forms of tuberculous lesions, January 22 to 28. A programme and particulars can be obtained on application.

A course of lectures on Tuberculosis and Venereal Disease will be given on Wednesdays at 4 p.m. at the Royal Institute of Public Health, commencing January 17, when Professor S. Lyle Cummins will give the introductory lecture.[3]

[1] Redman, T.: "Observations on Experimental Intestinal Tuberculosis—the Effect of Treatment with Naphthalene Emulsion" (*Journal of Pathology and Bacteriolgy*, vol. xxv., 1922).

[2] Dr. Rollier's paper appeared in the *British Medical Journal* for October 21, 1922.

[3] A programme of the course may be obtained on sending stamped and addressed envelope to the Royal Institute of Public Health, 37, Russell Square, W.C. 1.